THE ARCHITECTURAL RECORD

1935

3

PUBLIC AND PRIVATE HOUSING

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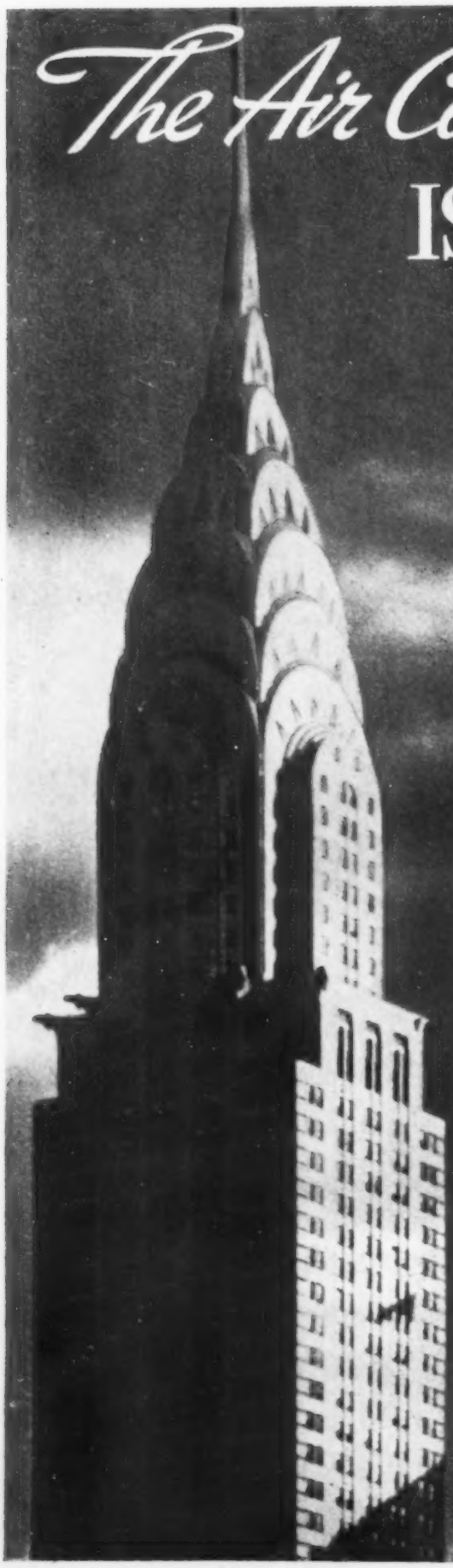

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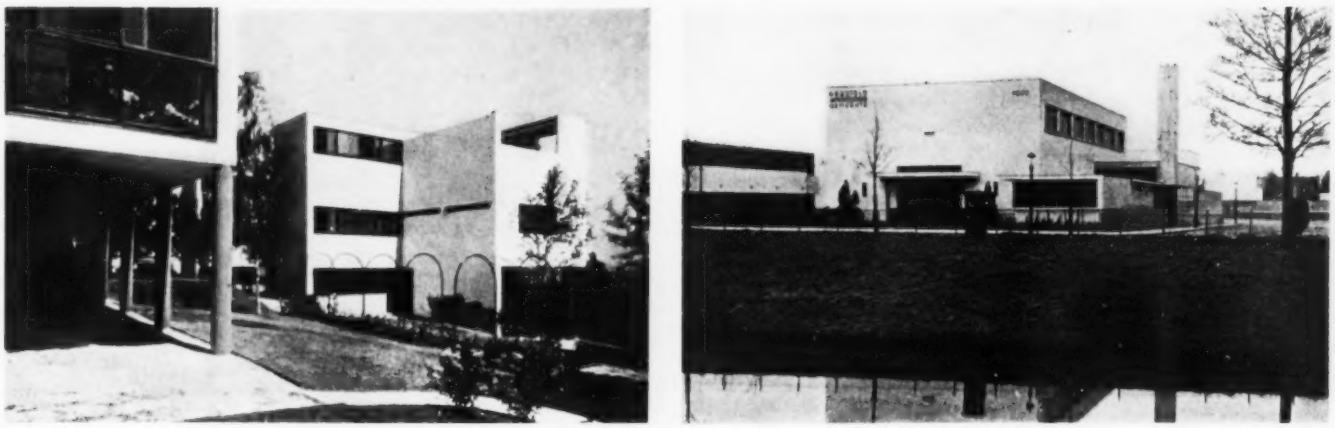

Illustrations from MODERN HOUSING. Left: Two houses in Weissenhof Siedlung, Stuttgart, Germany, by Le Corbusier, architect. Right: Kiefhoek housing development in Rotterdam by J. J. P. Oud, architect.

MODERN HOUSING. *By Catherine Bauer. Houghton Mifflin Company, 2 Park Street, Boston, Mass.* 331 *pages.* 48 *pages of plates.* $5.

This housing study is prefaced by an analysis of the failures and accomplishments of the nineteenth century and the pre-war era, which led to the existence of a "housing problem." Leading up to the modern housing movement by briefly describing the changes in the social structure, Miss Bauer gives the facts and figures of post-war housing. In a summary of the actual housing achievements of various European countries since the war, she gives brief histories of the measures employed—more than four million new dwellings being built with governmental aid and control. Part four of the book deals with the elements of modern housing; standards; community planning and layout; dwelling plans and construction; modern architecture; detailed cost analyses.

The author, with the financial assistance of the Carnegie Corporation, has traveled widely in Europe and has studied housing conditions at first hand. For a number of years she has been actively associated with movements in the field of housing, planning and modern architecture and has written on these and allied subjects for many periodicals. At present, she is Secretary of the Labor Housing Conference.

A pictorial history of housing development is presented in the plate section and the book also contains a bibliography and an index.

HOUSING ENGLAND: A Guide to Housing Problems and the Building Industry Presented in a Report by the Industries Group of PEP (Political and Economic Planning) December, 1934. *Paper cover,* 158 *pages. Published by PEP,* 16 *Queen Anne's Gate, London, S.W.A. Price* 5*s*

Private enterprise supplied 99 per cent of all housing in England up to 1910 and 95 per cent from 1910 to 1914. A definite shortage of working-class houses arose in 1910 and became serious during the War. The basic power of Local Authorities to build and own working-class dwellings dates from 1890, but after the War the Local Authorities were not in a position to exercise it on a scale commensurate with the need, and the Government undertook to provide loans and subsidies. Since the War, the Government has been active in housing legislation based on the principle that the Local Authorities are directly responsible for housing conditions in their jurisdictions and that it is the function of the Government to provide minimum standards and financial assistance. Besides local government, public health and town planning legislation, a number of General Housing Acts, Slum Clearance Acts and Special Rural Housing Acts have been passed since the War. These Acts produced between the Armistice and September 30, 1934, a total of 1,198,317 houses, compared with 1,150,522 houses produced during the same period without financial assistance.

The Government's post-war program has been more successful with respect to housing than with respect to slum clearance. Accordingly the Housing Act of 1933 discontinued the subsidies granted to encourage the building of new houses, but main-

tained the subsidies for slum clearance. The problem of housing rural workers is mainly a question of reconditioning existing dwellings and the reconditioning subsidy remains in force.

With the conclusion of the subsidy era, except in the special case of slum clearance, unassisted enterprise by Local Authorities and private capital was called upon to assume the entire burden of providing new houses. The present report is a study of the capacity of private capital to do its share.

To determine the amount of family income which constitutes the dividing line between tenants who cannot afford to pay economic rent and those who can seems to be just as difficult in England as it is in America. Without attempting to reach any definite conclusion on this point, the report declares that in attacking the problems of working-class housing, it is vital to distinguish clearly between three separate factors involved:

(1) In the first place, there is the *housing problem* proper, which is basically a problem of "bricks and mortar." It involves the question of shortage—the number of houses which must be supplied in order to house the working-class population at a satisfactory standard of accommodation; the question of unfit houses which ought to be pulled down; of others which require thorough overhauling to bring them up to the required standard; and of yet others, which, while individually fit, ought to be pulled down because, collectively, they have been too densely or inconveniently arranged on the ground.

(2) In the second place, there is the *rent problem*, which is essentially the problem of establishing a system whereby *all* working-class houses in the country will return to their owners neither more nor less than a reasonable economic rent. This probably involves some form of universal rent control (as distinct from tenancy control), which must not be punitive, but must aim at the prevention of excessive profit making.

(3) In the third place, there is the *problem of rent-paying capacity*, which should be solved on broad lines, by giving rent relief to *all* tenants requiring it according to their needs, irrespective of whether the landlords are Local Authorities, private owners, or housing associations. This third problem is really a problem of poverty and it is important that the problems of housing should be distinguished from the problems of poverty.

England's Building Societies (similar to our building and loan associations) have all through the depression commanded popular confidence as media for the investment of small savings, and the report says of them "there is little doubt that ample funds will be forthcoming from this source if there is a demand for them."

Except in the matter of mortgage financing, the findings of the report bear a remarkable similarity to those of the President's Conference on Home Building and Home Ownership. Disorganization, inefficiency and waste characterize building construction and land development in England as well as in America: " . . . there could be no sound solution of the housing problem which did not provide for reconstruction of the building and building materials industry, overhaul of building regulations, the setting up of national standards and so forth."

The principal recommendations also are similar to those of the President's Conference. They are (1) large-scale construction, (2) large-scale ownership and management and (3) research and statistics.

PRACTICAL EVERYDAY CHEMISTRY. *By H. Bennett, F.A.I.C., Editor-in-Chief of The Chemical Formulary. The Chemical Publishing Co. of New York, 175 Fifth Avenue, New York City.* 305 *pages.* $2

This book of formulas, simply written, tells how to make various products in daily use in office, factory, school, and home. Chapter X is entitled Materials of Construction. Under this heading are included concrete, cement, stucco, tile, terrazzo paving materials, plaster board, wood, metals and alloys and their treatments. Formulas for coloring, acid-proofing, waterproofing, fireproofing and rustproofing are included.

DIE NEUEN UNIVERSITATSKLINIKEN IN ZURICH. *Fretz and Wasmuth Verlag A.G., Zurich, 8, Switzerland, Akazienstrasse* 8. 104 *pages. Illustrated.* 5 *Swiss francs*

This booklet is a report of the jury on the competition for the design of the University clinics and hospital in Zürich. Fully descriptive plans and designs are included by 22 competing architects and architectural firms.

EARLY ARCHITECTS AND BUILDERS OF INDIANA. *By Lee Burns. Indiana Historical Society Publications, Volume II, Number 3. Indiana Historical Society, Indianapolis, Indiana.* 215 *pages. Illustrated.*

THE ARCHITECTURAL RECORD

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NEW *for* OLD *with the help of* STUCCO

HERE'S one time the doctor took his own medicine—and liked it.

J. S. Schirm Commercial Co. has sold building materials in San Diego for many years. Those years took toll on warehouse and office buildings. In fact, though still structurally sound, they began to look pretty shabby. "We'll not only *tell* our customers about modernizing," decided the Schirm people, "—we'll *show* them."

The pictures show the job that was done—and what a job it is! The gleaming new modern exterior is pure white Mission stucco, a prepared stucco made with Atlas White portland cement. Placed on the sturdy walls of the existing structures, it worked an economical miracle. The Schirm buildings are now one of the best sales arguments for modernizing that the Schirm people have.

For architects who have similar jobs, Atlas White stucco (*prepared stucco is preferred*) will prove effective and economical. It is applied in any texture suitable to the architectural design. It is made in *any* color. It is sturdy, firesafe, durable. Write for complete information to Universal Atlas Cement Co., Subsidiary of United States Steel Corporation, 208 South La Salle Street, Chicago.

At top—This is the way the office and warehouse building of the J. S. Schirm Commercial Co., San Diego, looks today, after remodeling with Mission stucco made with Atlas White. Herman Louis Bodner was the architect. Clark and Scholbraid were plastering contractors. Both of San Diego.

Directly above—The same building before remodeling.

STUCCO *made with* ATLAS WHITE
PORTLAND CEMENT

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HOUSING

On overpage, photograph of Brooklyn, New York, by Fairchild Aerial Surveys, Inc.

THE

ARCHITECTURAL RECORD

HOUSING AS A NEW INFLUENCE IN ARCHITECTURE

The conviction is general among architects that when recovery sets in the conditions of practice will differ materially from those which existed during the post-war activity. It is now evident that one of the changed conditions has to do with the types of residence common in suburbs and small cities. It is for the benefit of these types that capital is being made available. The new capital—for whatever purpose borrowed, refinancing or new construction, by a municipality, a limited dividend corporation, an operative builder or an individual home owner—will be secured by the same kind of mortgage. This mortgage will be taken by thrift institutions which in the interest of their depositors will be obliged to have it insured by the Federal Mutual Mortgage Insurance Corporation.

The standards of eligibility for insurance set up by the Corporation cover every major factor which, according to experience, bears on stability of real estate values, from the community plan with its physical, social and economic features, including opportunities for employment, to site coverage, design, plan and construction. The standards are in advance of common practice, calculated to abolish traditional abuses and, by eliminating waste, to promote economy of cost.

Having the force and character of legislation, the standards describe results rather than means. For example, they demand sound construction but do not say how sound construction is to be achieved. For practical application they require interpretation and illustration.

The most authentic commentary on those of the standards that affect the practice of architecture is the work done by the Housing Division of the Public Works Administration. Not only does this work comply with mortgage insurance requirements but it suggests that admirably designed, planned and constructed fireproof houses can be privately built for income groups heretofore neglected by operative builders.

A publication of exceptional value to architects is in preparation by the Housing Division. Through the courtesy of Col. Horatio B. Hackett, Director of the Federal Emergency Housing Administration of Public Works, this magazine is privileged to publish a selection of the plans and the substance of the text. A good part of The Record for the current month is therefore given to the forthcoming publication, to be entitled "Sample Plans." The issue as a whole is devoted to a representative showing of houses in the category for which the benefits of the reorganized mortgage market are intended.

HOW THE PWA HOUSING DIVISION FUNCTIONS

By Colonel HORATIO B. HACKETT, Director, Housing Division, Public Works Administration

In several cities slums have been torn down through the Public Works Administration's program. In many more plans are being formulated for new housing to replace long dilapidated areas. Contracts are being let for construction of housing projects. Limited dividend corporation developments, made possible by the Housing Division, are receiving tenants. The entire nation has become "slum conscious" and the rehabilitation or removal of slums has become miraculously probable. Stimulated by the opportunities afforded by the PWA's Housing Division, cities are sizing up their housing conditions and turning to the Federal Government for aid.

When originally established the Housing Division was responsible for directing a slum-clearance and low-rent housing program through aid and supervision of limited dividend corporations. The restrictions of this plan were soon apparent. To accomplish extensive work in clearing blighted or slum areas, it was evident that a direct Federal program was required. This meant that the Division would have to be organized to aid and guide cities in assembling pertinent facts concerning their housing needs. A staff of highly qualified architects and engineers would be required to analyze and evaluate proposed construction plans and site developments. It would be necessary to have one branch to assemble land, another to direct construction and a group to care for management. Briefly, the merely supervisory functions of the organization had to be revamped to assume executive responsibilities.

As the Housing Division abandoned the limited dividend set-up and turned to direct Federal initiation, development, and construction of projects, it realized that almost nowhere in the country was there an adequate background of statistical, sociological and technical knowledge to make it possible for architects to plan projects intelligently. Not only were data unavailable in most cities but the authorities did not even know what data were essential. This statement is intended to reflect discredit on no one. That state of affairs was inevitable in a country where, until two years ago, ninety-nine out of a hundred persons had never heard the phrase "low-cost housing."

In the reorganization of the Housing Division to handle the Federal program, it was essential that projects be handled expeditiously. We were driving for well conceived projects, but also for speed in production. We wanted to get the program moving and to put men to work.

HORATIO B. HACKETT
Director, Housing Division

A. R. CLAS
Assistant Director

On the assumption that the development of a housing project is primarily an architectural problem, the new Division was set up on the same principles as those adopted by large architectural offices. This is of course a highly simplified statement of the case, but it holds true in general terms. We envisioned an organization to accept applications for

Just before the first Federal project in the Housing Division's program was inaugurated officially. Photo taken at Atlanta, Ga., at ceremonies marking demolition of slum area to be replaced by the Techwood and University projects. Left to right: D. A. Calhoun, local Supervisory Project Manager; Major General George Van Horn Moseley; Secretary of the Interior Ickes, and Col. Horatio B. Hackett, Director of the PWA Housing Division.

projects and to develop them logically with a minimum of time by passage from one branch to another according to the type of work involved.

Thus it was that a Branch of Initiation and Recommendation was set up to handle the first steps in a project. When a city submits an application for a Federal slum-clearance and low-rent housing project to the Division, it is referred to this Branch. The personnel of this group, chiefly architects, checks data submitted, visits the applicant cities, aids with compiling the social and economic factors necessary in analyzing a project, and shapes it up roughly as to size, type and cost.

It sometimes happens that cities in preparing applications for PWA housing undertake searching analysis of their housing situations. When detailed analysis of existing and needed housing is made by applicants, the work of the Initiation and Recommendation Branch is correspondingly lightened. Otherwise the Branch aids in having such investigation completed.

With the necessary data assembled, sites studied and the most promising areas selected, the Branch makes a report on what it considers the most feasible project to meet local conditions. An operating set-up is included. This report is submitted to the Public Works Administrator for approval.

The next step is assembling the land. Following approval of the recommendations the Branch of Land Acquisition swings into action. In the process of acquiring the desired site, this Branch lets local contracts for appraisals, and secures title searches, surveys and options on property parcels involved.

Purchase of the land is supervised and controlled by a representative of the Division, who proceeds to the city where the project is to be erected and handles all matters in connection with the land assembly. Our experience has been that land accumulation, even with the aid of Federal condemnation, requires from four months in smaller cities to seven

Photo shows Secretary Ickes, and the Hon. Ellen Wilkinson, former Labor Member of Parliament and former parliamentary private secretary to the department in charge of English housing, examining a model of a low-cost housing project on exhibit at the National Housing Conference in Washington.

Wide World Photos

months in the larger centers. Condemnation proceedings are usually friendly. The policy of acquiring land through eminent domain is followed only in exceptional cases, principally to terminate any attempted speculation.

As soon as the optioning process indicates that land can be purchased at an appropriate figure, a contract is made with private architects chosen from the city involved. This contract provides for the preparation of a set of plans and specifications, and does not include supervision. While the Division keeps control of this work, free rein is given to architects in the preparation of their plans and specifications.

At this phase the Branch of Plans and Specifications plays its main role. Representatives from this unit, trained in the work of site planning and unit layout, costs, landscaping and design, are sent from Washington to the various cities in which plans are being prepared for the purpose of checking the work as it progresses so that satisfactory drawings may be presented in the shortest possible time.

Architectural contracts are made with a group of architects rather than with an individual so that the work can be distributed as much as possible. Architects are usually selected directly by the Housing Division from its complete and carefully compiled records of qualification. Drawings are made following notification of selection. The fee for architectural service is in accordance with a definite schedule and varies from six per cent on construction amounting to $100,000 to two per cent on $10,000,000. The fee is based on an expected repetition of units, with no unusual ground conditions.

After transfer of land title to the Federal Government, the Branch of Construction contracts for demolition of existing buildings. When project plans are signed and the area razed, this Branch has charge of awarding a general construction contract and supervising its execution. All contracts are subject to PWA regulations.

The Management Branch begins its most active work simultaneously with plans for demolition. Field employees of this Branch supervise the relocation of tenants and participate in surveys affecting tenancy for the new housing. The management of these projects will entail more than mere responsibility of building management. For this reason the job categories of this Branch provide for persons trained in accounting, operating, renting, general supervision, recreation and education.

In addition to the five major branches mentioned, there is an Administrative Branch which carries out the administrative functions of the housing organization.

There is also the Legal Branch which works closely with the Land Acquisition Branch in matters of title search, condemnation and other steps of land accumulation, and cooperates with all branches on contractual relationships. During recent months the Legal Branch has been particularly active in responding to requests from state and municipal governments for assistance in drafting housing legislation. Along this line a model housing act has been drafted by the legal staff.

PREPARATION OF SAMPLE PLANS

As a means of expediting its work, the Housing Division established architectural guides or "sample" plans which are discussed in the following pages of this issue of THE ARCHITECTURAL RECORD.

The plans do not seek to impose standardization. Rather they incorporate many principles which we feel should govern construction of low-rent housing, and they greatly facilitate laying out a project. They represent almost every conceivable situation confronting architectural consideration, and are submitted to architects as suggestions, with the invitation to adapt the fundamental principles to their particular local problem.

The sample plans employ T, ribbon, cross, gallery and other types of layout. Each unit contains a specified arrangement of apartments, with a room layout incorporating standard minimum dimensions.

It is a simple matter to prepare small pine blocks on a 32nd-inch scale, representing each building unit. By placing these on a 32nd-inch scale drawing of the site, we are able quickly, in the same manner as a child plays with blocks, to arrive at desirable arrangement of buildings. With this method it is possible to devise a satisfactory site layout in a few hours and at the same time eliminate expense in drawing plans.

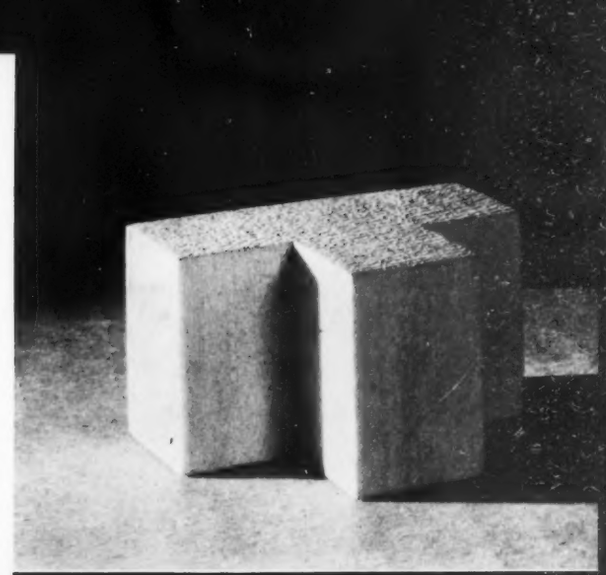
With this equipment an architect, or his group, can come to Washington and in a few days lay out a site or plot plan that will meet with the approval of the Housing Division, and save many days of useless drawing.

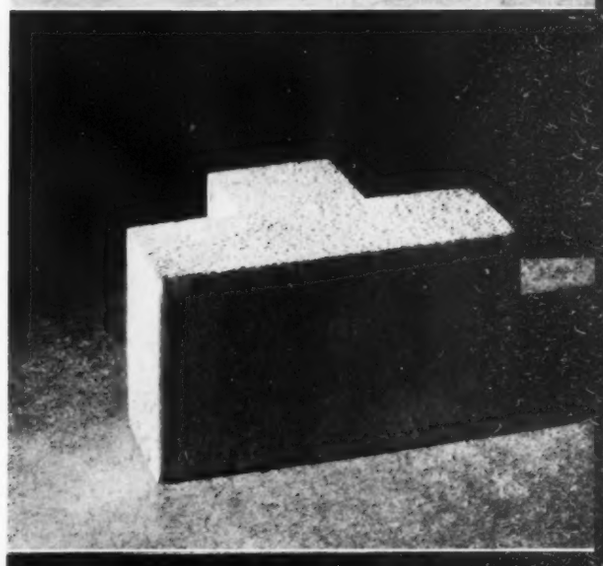
Study of the plans reproduced in this issue will illustrate the principles I am discussing. It is not necessary for the local architect to spend months in research before submitting his preliminary plans. With the means at hand to solve his layout problem and with a guide to the treatment of the living units, he should be able to develop his plans promptly without the excessive cost of preliminary work.

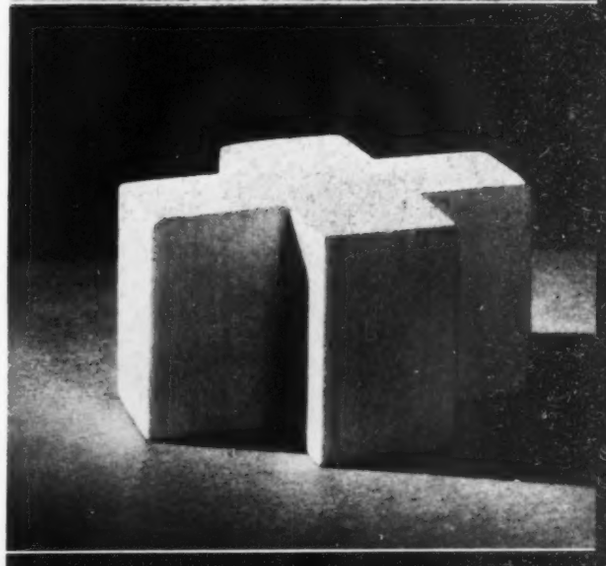
Should these sample plans open new avenues of approach in the minds of architects, and if they will aid them in formulating their own ideas, I feel that the time involved in their preparation has been well spent.

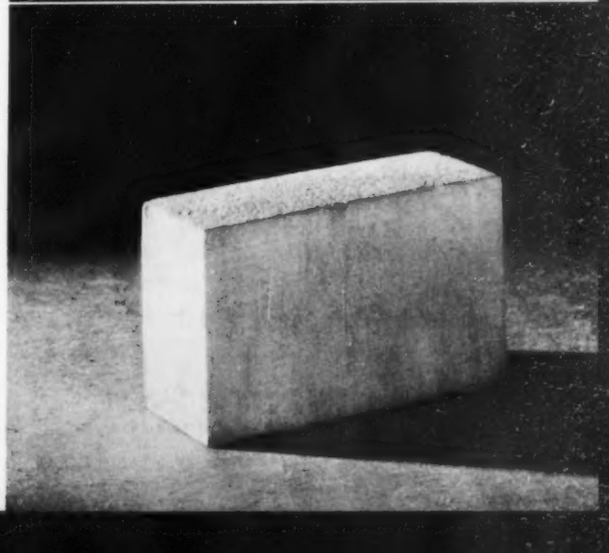
SAMPLE PLANS

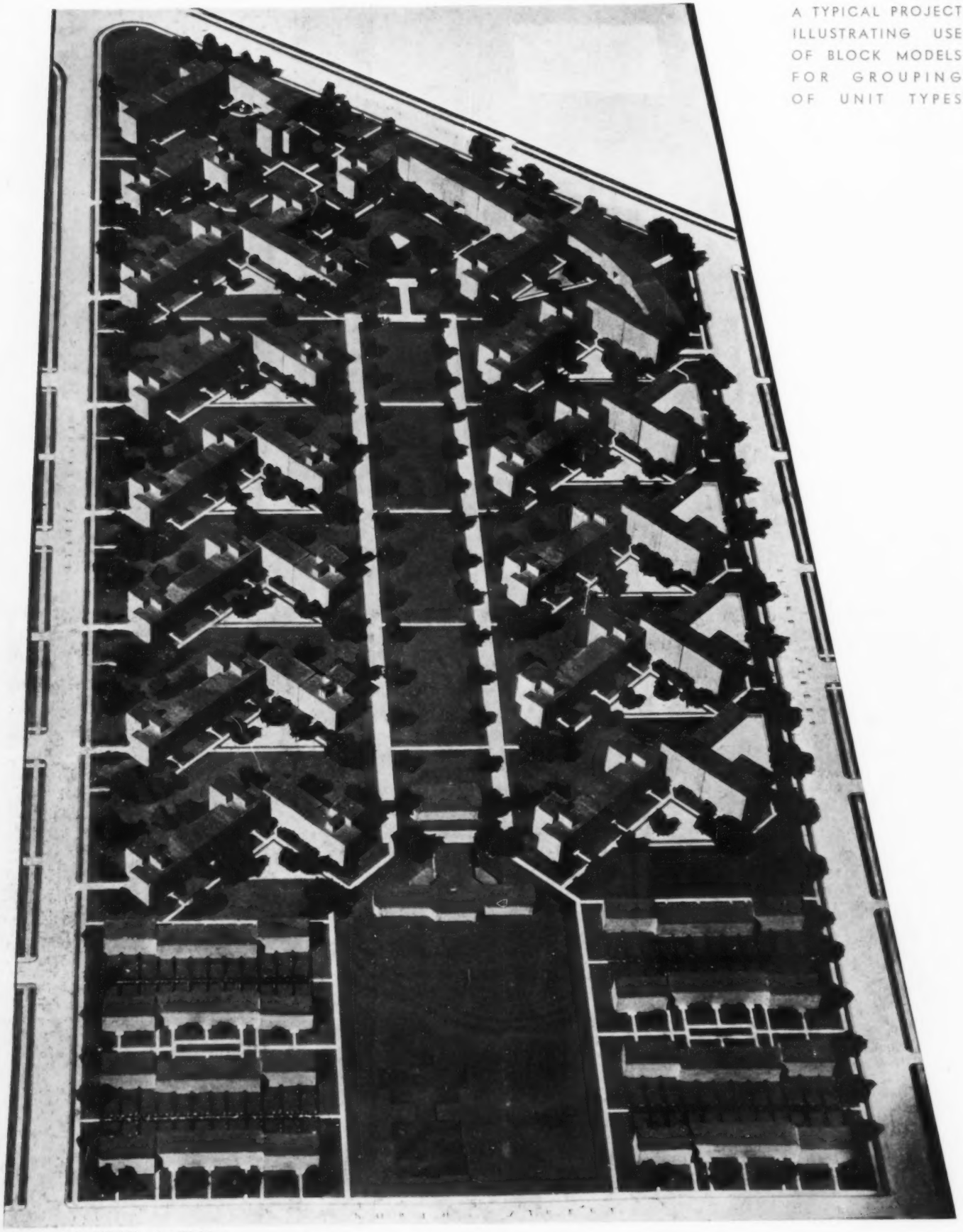
PREPARED BY HOUSING DIVISION
PUBLIC WORKS ADMINISTRATION
FOR LOW-RENT HOUSING PROJECTS











A TYPICAL PROJECT ILLUSTRATING USE OF BLOCK MODELS FOR GROUPING OF UNIT TYPES

Photograph by PWA Housing Division

UNIT TYPES OF PLANS FOR LOW-RENT HOUSING PROJECTS

Small wood blocks, dimensioned to scale, are suggested by the Housing Division for use in arranging and massing the unit types of plans presented in the following pages. The general group layout will vary with local problems since the relationship of the assembled units is as much a study of particular community needs as of site conditions. For this reason all plans are presented impartially by the Housing Division, and the final choice is left to the architect and others familiar with specific local requirements. The computations and constructive suggestions given with each plan are intended to show comparative features and to assist the architect in making his selections.

In many projects it may be found advisable to combine the various types in order both to increase the rentability and to add to the architectural composition of the plot plan. Additional facilities, such as community buildings, stores and garages, must necessarily be designed separately by the architect to suit the special needs of the group.

It should be noted that the minimum desirable sizes shown in the sample plans might be increased efficiently and would thereby add to the rentability. These plans, in practically every case, were developed to cover minimum requirements only. It should also be observed that no plans can possibly be decreased without seriously affecting rentability.

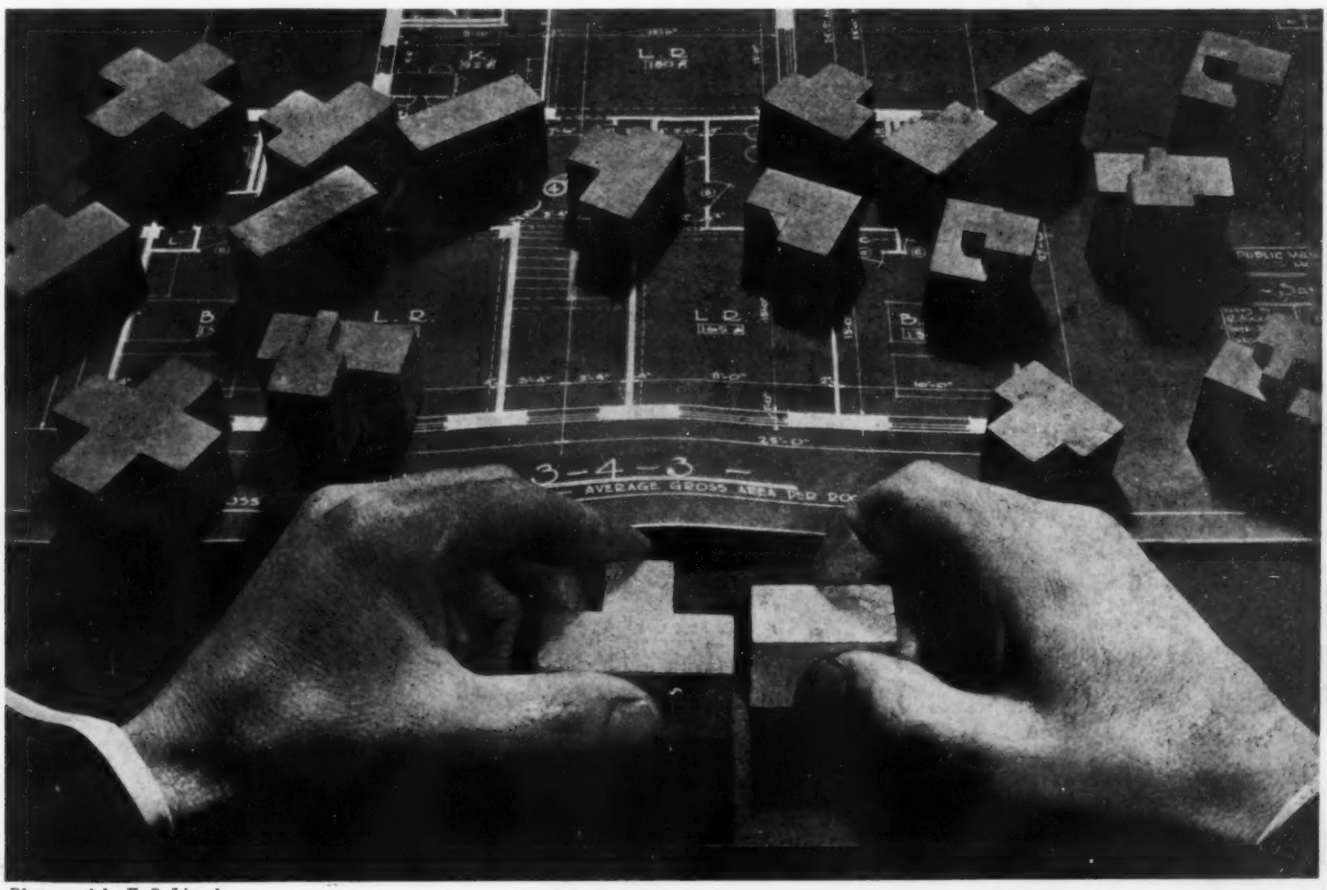
(1) APARTMENT HOUSE TYPE:
Architectural variations — T-plans, ribbon plans, cross plans, balcony plans, gallery plans.
Construction variations—Center column plans, off-center plans.

(2) FLAT HOUSE PLAN TYPE:
Ribbon plans, balcony plans.

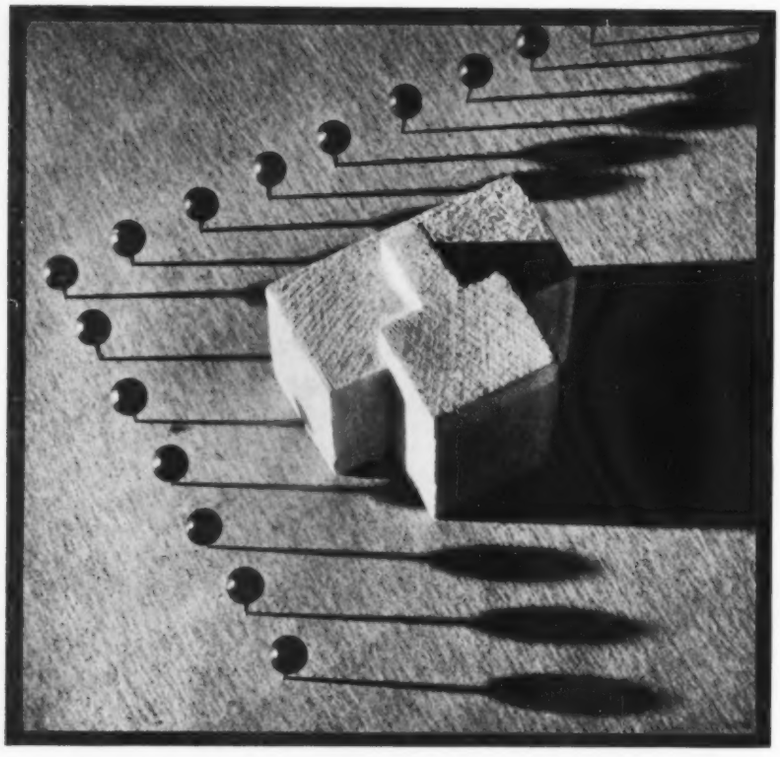
(3) ROW HOUSE PLAN TYPE:
Ribbon plans, balcony plans.

(4) GALLERY PLAN TYPE.

(5) COMBINATION FLAT AND ROW HOUSE TYPE:
Three-story building combining (2) and (3).

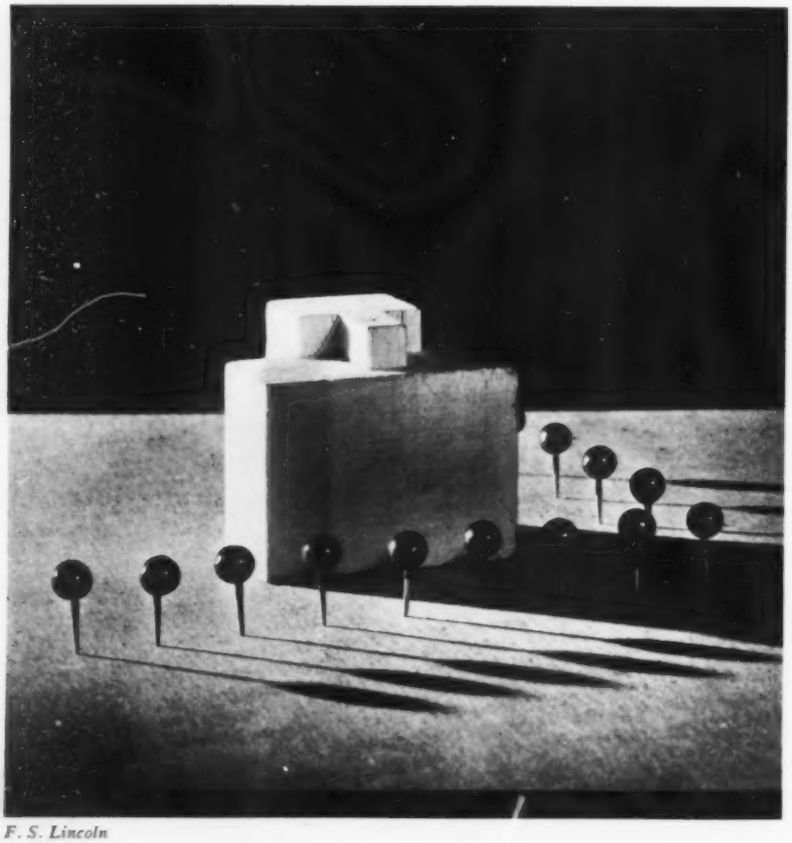


Photograph by F. S. Lincoln



T-PLANS

Contrary to the general belief that this type of plan should be used only where a break occurs in a series of straight ribbon plans, it has been found that the T-plan is most adaptable for ribbon use. In apartment house design the T-plan not only reduces stair and incinerator costs but it also lowers the amount of exterior wall perimeter expressed in terms of lineal feet per room. Some critics may say that the deep stairwell characteristic of the T-plan is waste space; to offset this argument, careful checking will indicate that the actual depth of the stairhall is hardly any greater than is found ordinarily.



F. S. Lincoln

ON-CENTER COLUMN VS. OFF-CENTER COLUMN: The placing of the line of columns between the two exterior walls has long been a subject of argument among architects. There are advantageous factors as well as disadvantages attached to each arrangement, and for that reason only types are presented. Actual examples have proven no appreciable difference exists in construction cost between the two methods, although the greater plan possibilities of the off-center column plans should be noted.

CHIEF CHARACTERISTICS OF UNIT PLANS:

Incinerator for each unit.

Juxtaposition of kitchen and bath in each suite.

Bathrooms uniformly of standardized dimensions.

Kitchens designed for dining space.

Living rooms designed for possible use as bedrooms.

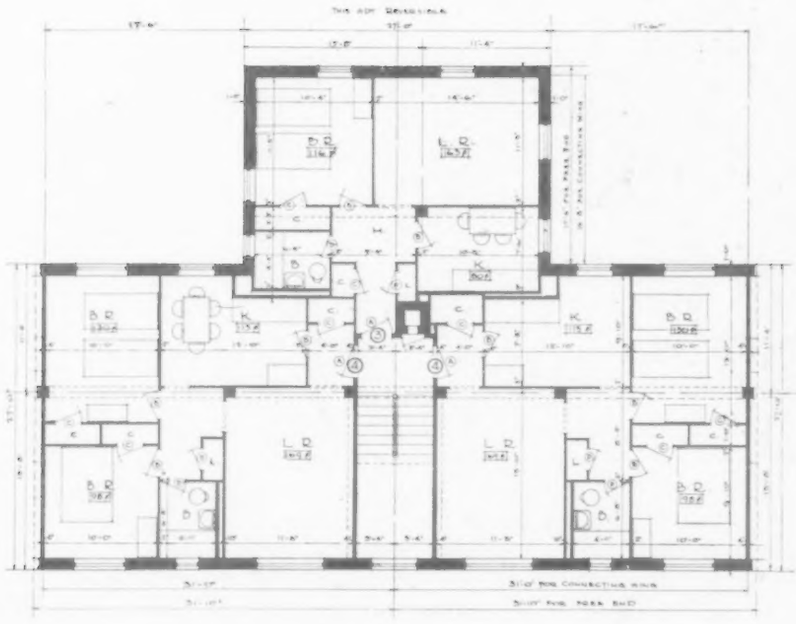
Minimum space in hallways.

Passage from any room to front door without disturbing privacy of other rooms.

Standardized span of 27′-0″ from outside wall to outside wall.

UNIT 5-4-5

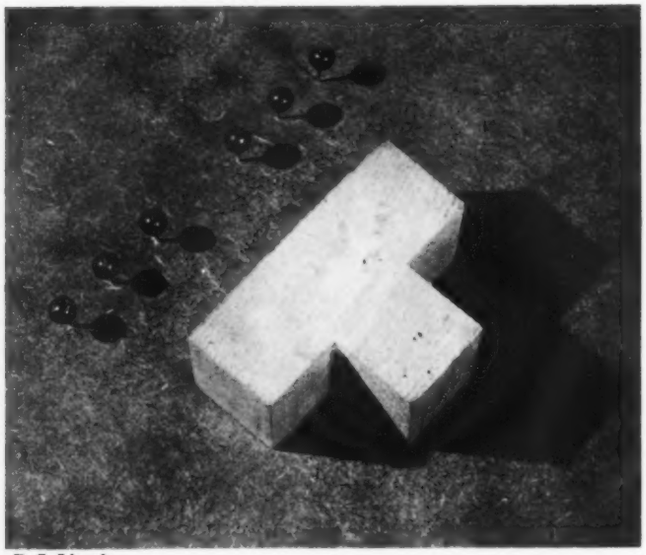
TOTAL GROSS AREA PER UNIT: 2650 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 189 SQUARE FEET
OFF-CENTER COLUMNS



UNIT 4-3-4

TOTAL GROSS AREA PER UNIT: 2146 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 195 SQUARE FEET
OFF-CENTER COLUMNS

T-PLANS CONTINUED



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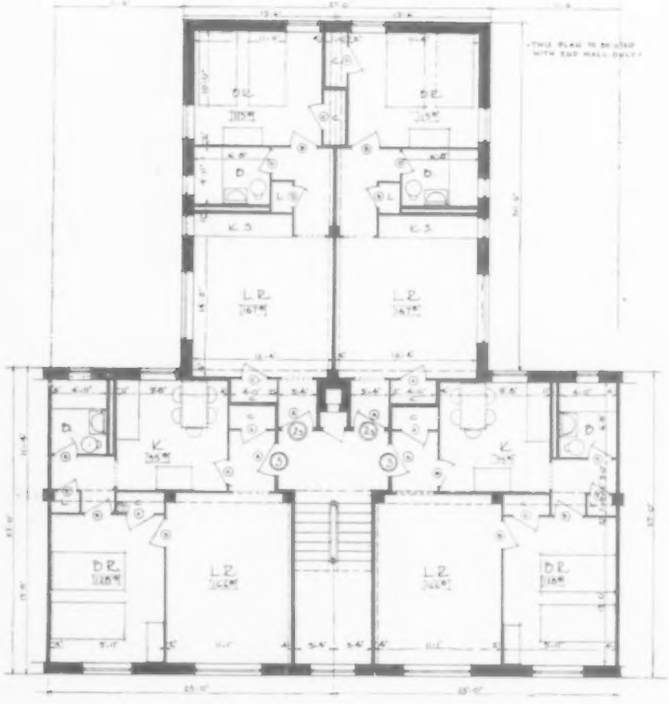
ALL PLANS WITH COLUMNS OFF-CENTER



UNIT 3-2s-2s-3

TOTAL GROSS AREA PER UNIT: 2174 SQUARE FEET

AVERAGE GROSS AREA PER ROOM: 217 SQUARE FEET

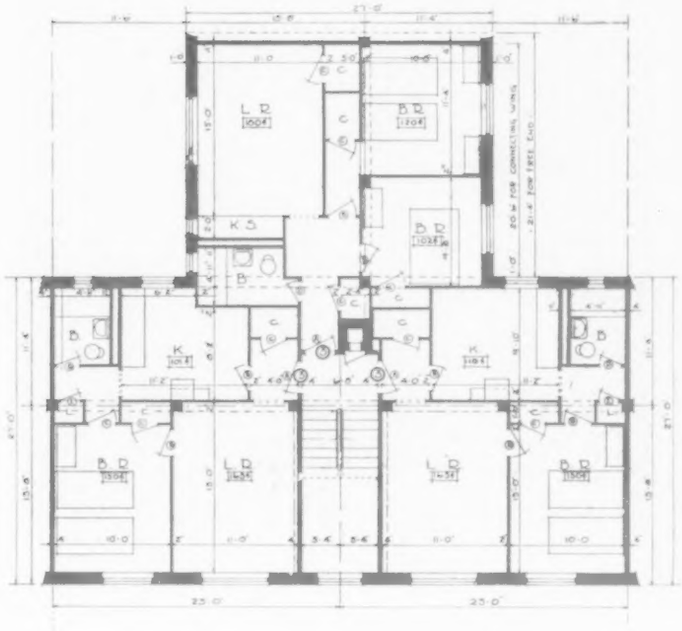
UNIT 4-4-4

TOTAL GROSS AREA PER UNIT: 2327 SQUARE FEET

AVERAGE GROSS AREA PER ROOM: 194 SQUARE FEET

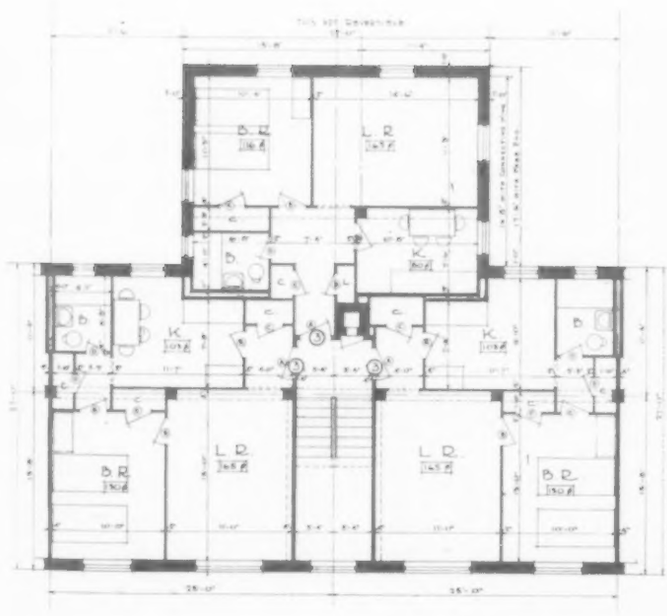
UNIT 3-3-3 (BALCONY)

TOTAL GROSS AREA PER UNIT: 1797 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 200 SQUARE FEET
(PORCHES NOT INCLUDED)



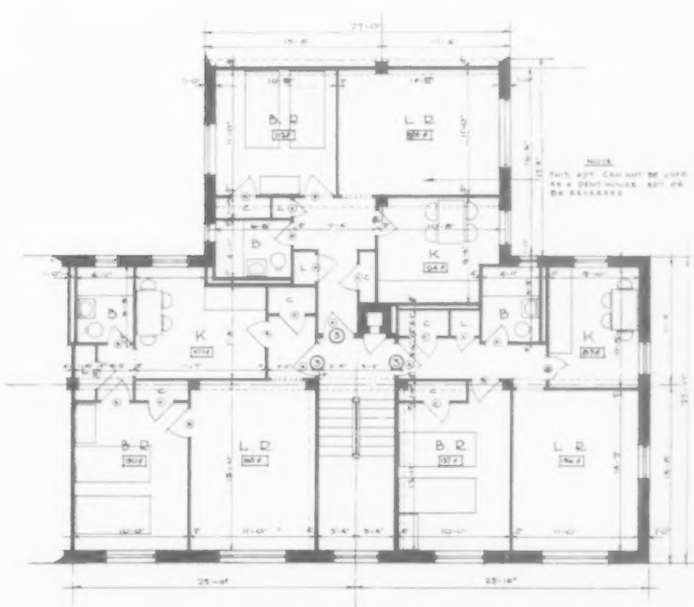
UNIT 3-3s-3

TOTAL GROSS AREA PER UNIT: 1904 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 211 SQUARE FEET



UNIT 3-3-3

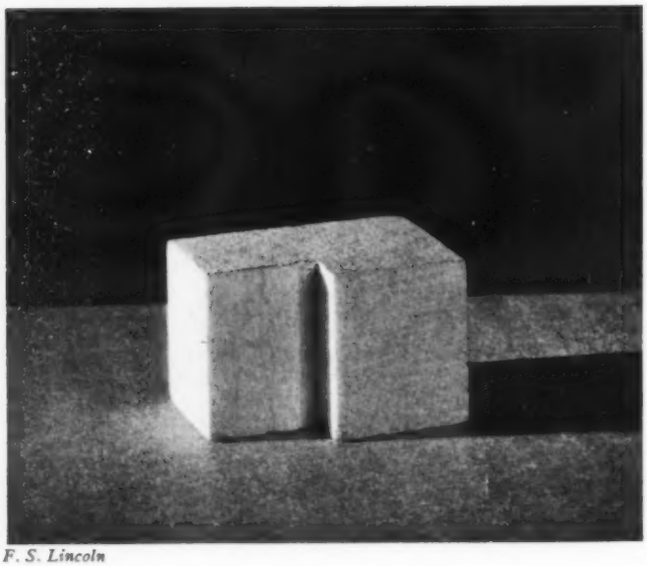
TOTAL GROSS AREA PER UNIT: 1822 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 202 SQUARE FEET



UNIT 3-3-3-"A"

TOTAL GROSS AREA PER UNIT: 1818 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 202 SQUARE FEET

L-PLANS



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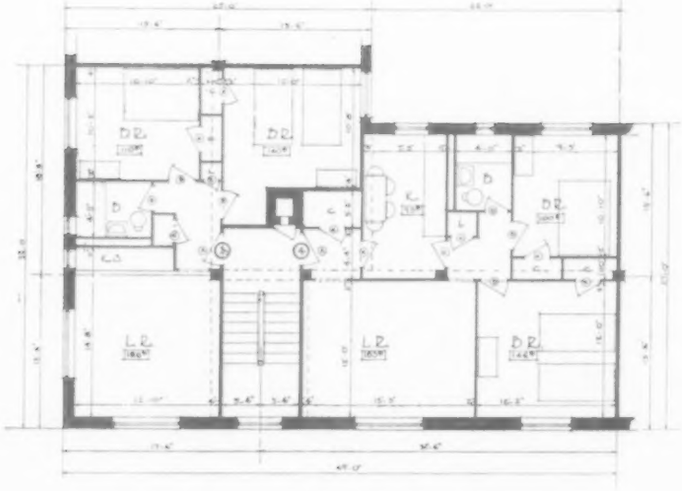
OFF-CENTER COLUMNS

CORNER UNIT 3-2s-3

TOTAL GROSS AREA PER UNIT: 1711 SQUARE FEET

AVERAGE GROSS AREA PER ROOM: 214 SQUARE FEET

CENTER COLUMNS



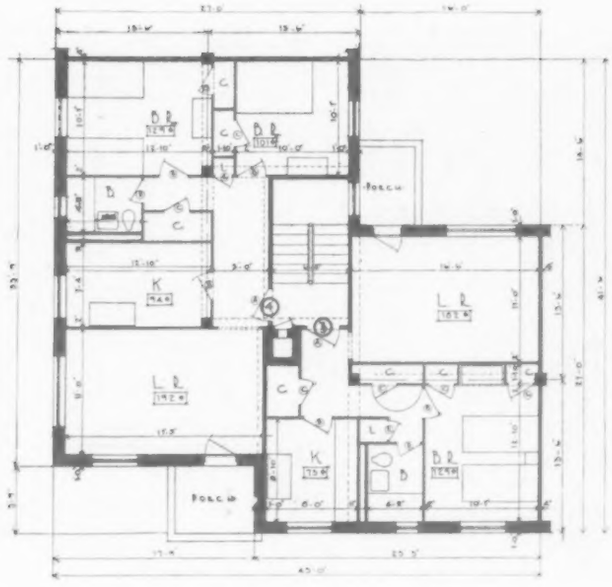
CORNER UNIT 3s-4

TOTAL GROSS AREA PER UNIT: 1458 SQUARE FEET

AVERAGE GROSS AREA PER ROOM: 208 SQUARE FEET

CORNER UNIT 3-4

TOTAL GROSS AREA PER UNIT: 1462 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 208 SQUARE FEET
OFF-CENTER COLUMNS



CORNER UNIT 3-4

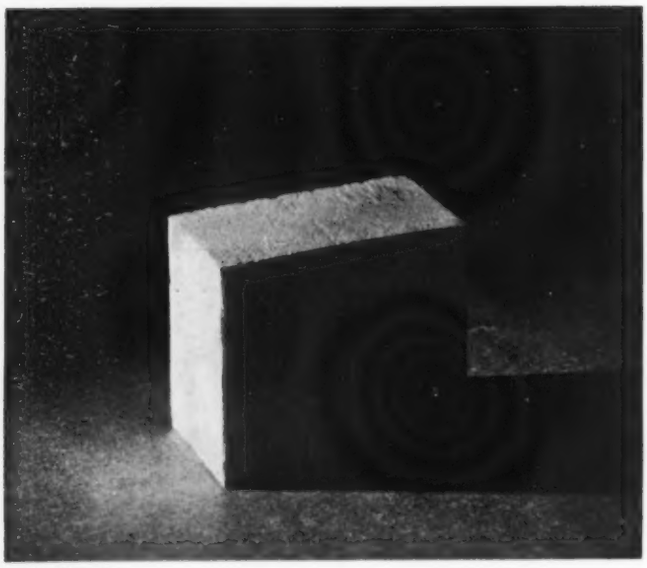
TOTAL GROSS AREA PER UNIT: 1440 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 205 SQUARE FEET
CENTER COLUMNS

CENTER
COLUMNS

CORNER UNIT 4-2s-4

TOTAL GROSS AREA PER UNIT: 2114 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 212 SQUARE FEET

RIBBON PLANS



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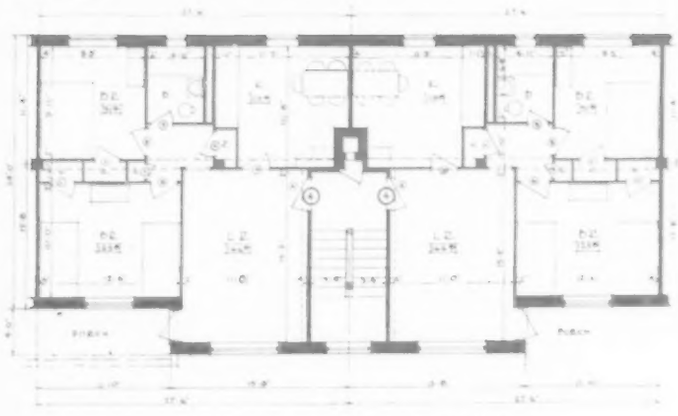
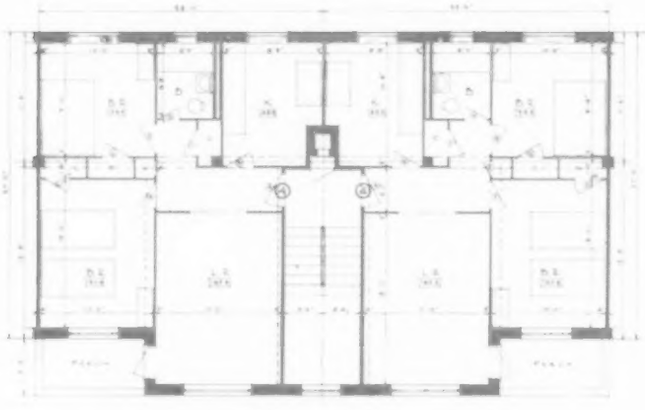


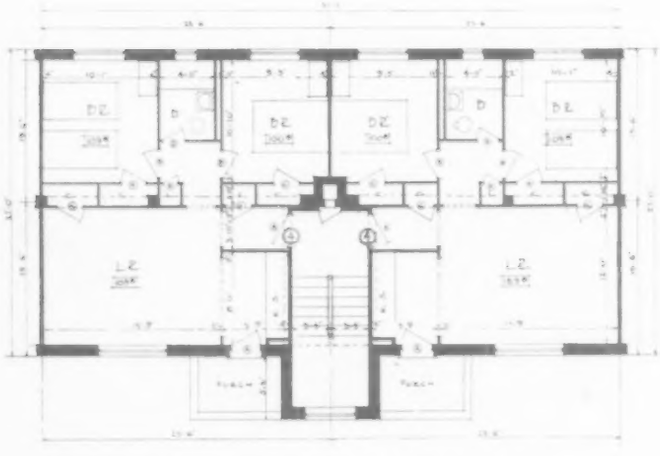
UNIT 4-4 (BALCONY)

TOTAL GROSS AREA PER UNIT: 1445 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 181 SQUARE FEET
PORCHES NOT INCLUDED — OFF-CENTER COLUMNS



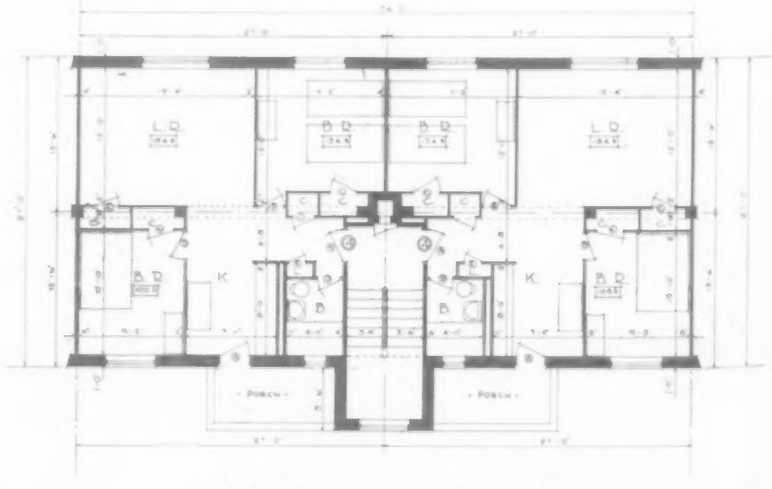
UNIT 4-4 (BALCONY)

TOTAL GROSS AREA PER UNIT: 1506 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 188 SQUARE FEET
PORCHES NOT INCLUDED — OFF-CENTER COLUMNS



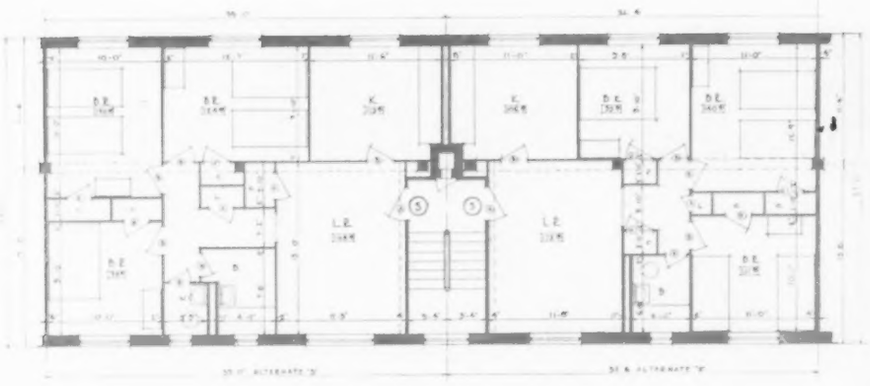
UNIT 3s-3s (BALCONY)

TOTAL GROSS AREA PER UNIT: 1425 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 237 SQUARE FEET
PORCHES NOT INCLUDED — CENTER COLUMNS



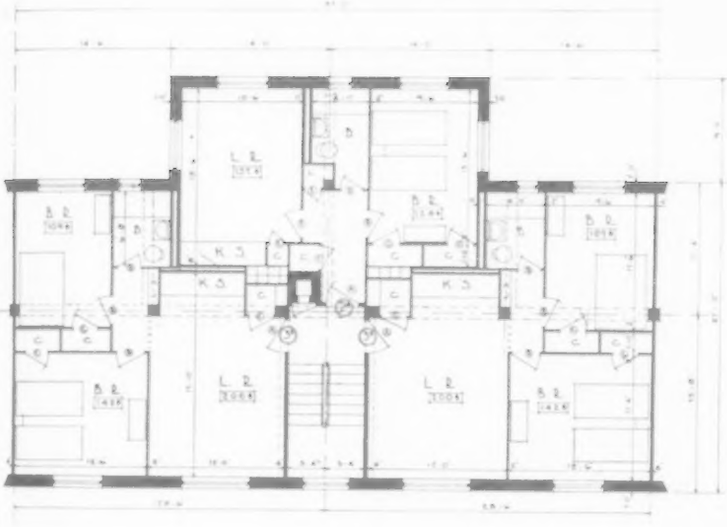
UNIT 4-4 (BALCONY)

TOTAL GROSS AREA PER UNIT: 1568 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 196 SQUARE FEET
PORCHES NOT INCLUDED — CENTER COLUMNS



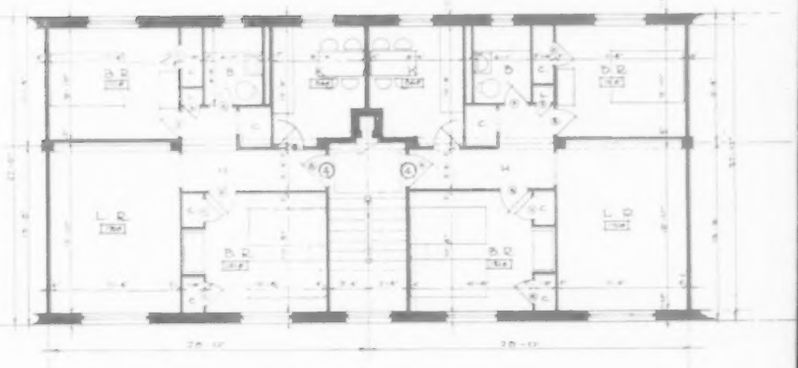
UNIT 5-5

TOTAL GROSS AREA PER UNIT:
945 SQUARE FEET (35'0" UNIT)
878 SQUARE FEET (32'6" UNIT)
AVERAGE GROSS AREA PER ROOM:
189 SQUARE FEET (35'0" UNIT)
175 SQUARE FEET (32'6" UNIT)
OFF-CENTER COLUMNS



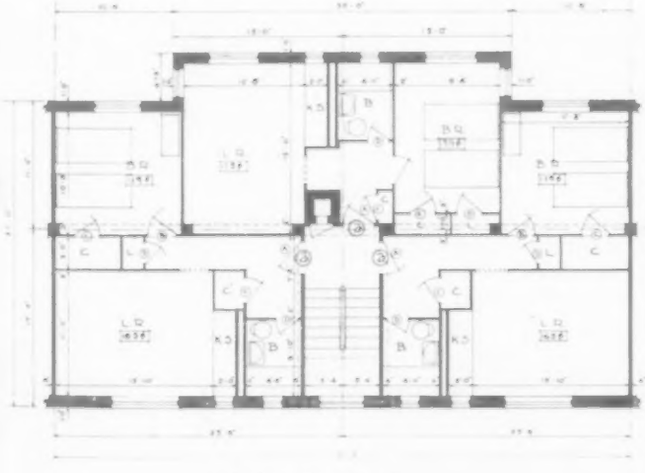
UNIT 3s-2s-3s

TOTAL GROSS AREA PER UNIT: 1781 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 223 SQUARE FEET
OFF-CENTER COLUMNS



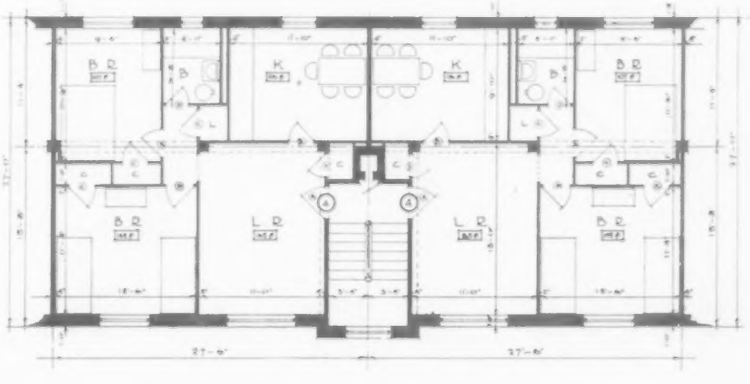
UNIT 4-4-"C"

TOTAL GROSS AREA PER UNIT: 1512 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 189 SQUARE FEET
OFF-CENTER COLUMNS



UNIT 2s-2s-2s

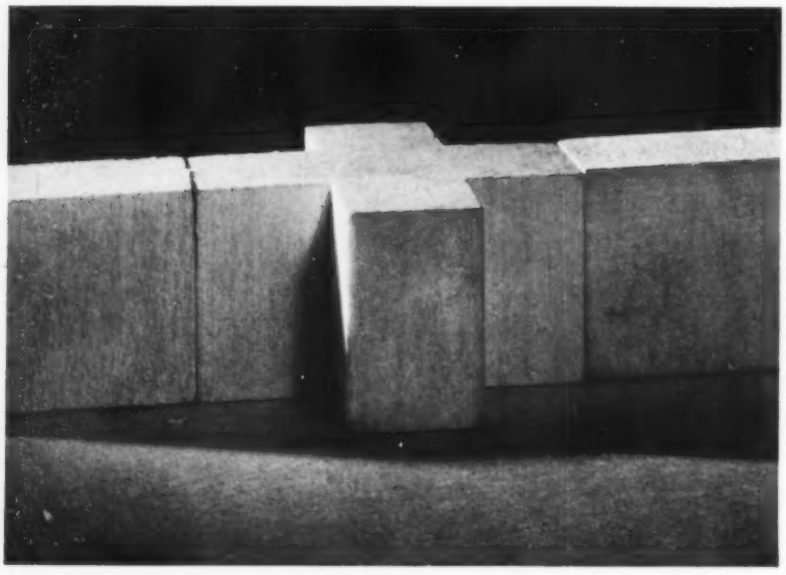
TOTAL GROSS AREA PER UNIT: 1507 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 251 SQUARE FEET
OFF-CENTER COLUMNS



UNIT 4-4-"B"

TOTAL GROSS AREA PER UNIT: 1494 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 187 SQUARE FEET
OFF-CENTER COLUMNS

CROSS PLANS



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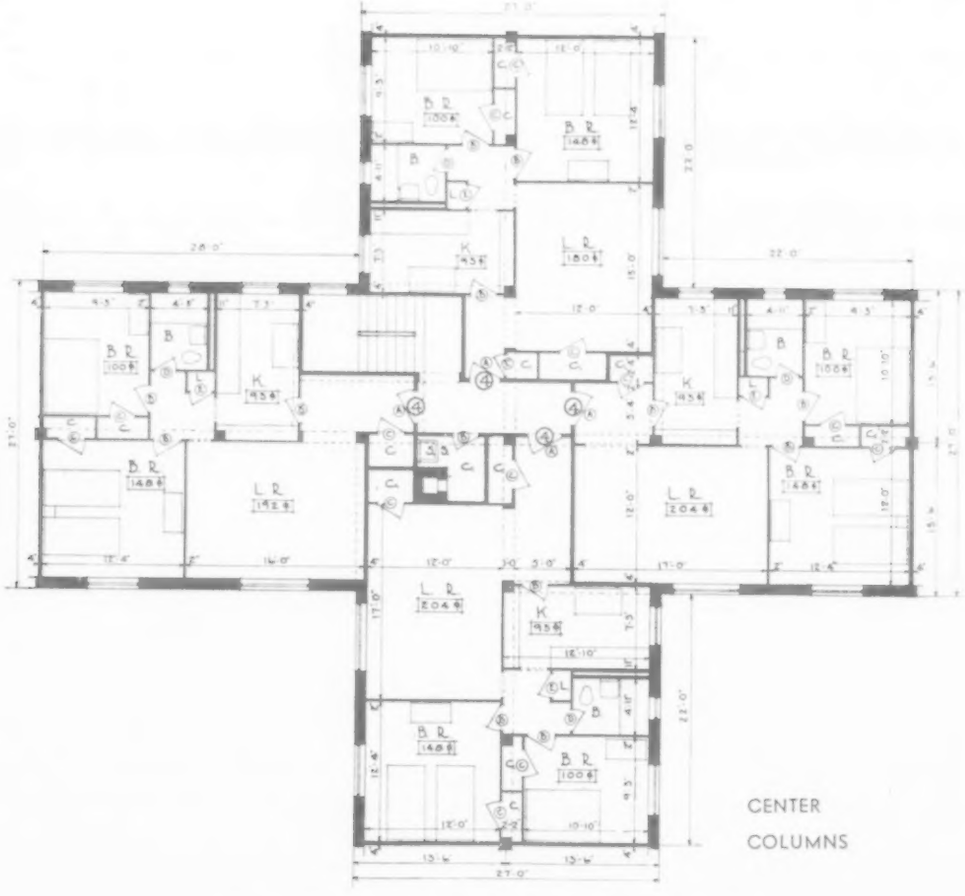
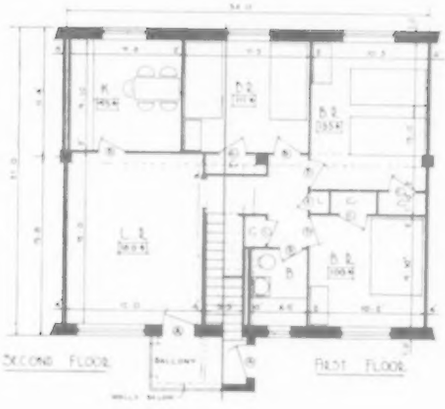
UNIT 4-4-4-4



TOTAL GROSS AREA PER UNIT: 3267 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 204 SQUARE FEET

TWO-STORY FLATS



FIVE-ROOM FLAT

TOTAL GROSS AREA PER UNIT: 886 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 177 SQUARE FEET

FIVE-ROOM FLAT WITH UTILITY ROOM

TOTAL GROSS AREA PER UNIT: 996 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 199 SQUARE FEET

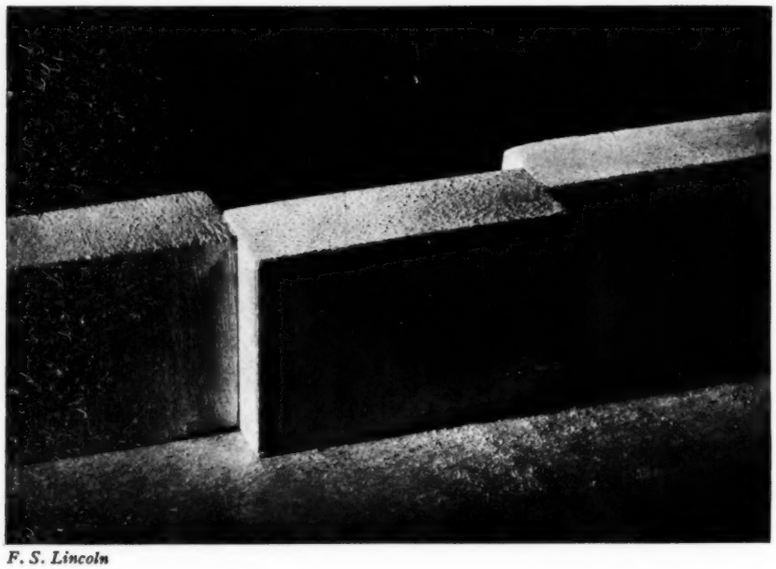
FOUR-ROOM FLAT

TOTAL GROSS AREA PER UNIT: 729 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 182 SQUARE FEET

INTERLOCKING THREE-ROOM FLATS

TOTAL GROSS AREA PER UNIT: 1188 SQUARE FEET
AVERAGE GROSS AREA PER ROOM: 198 SQUARE FEET

ROW HOUSES



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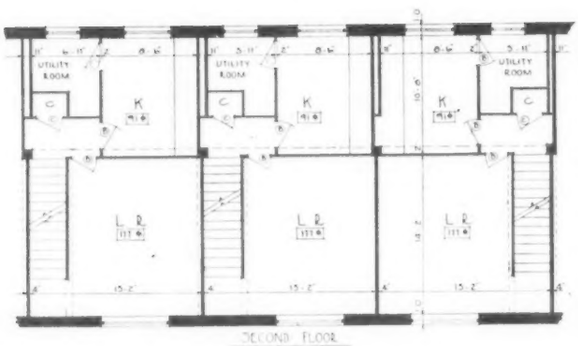
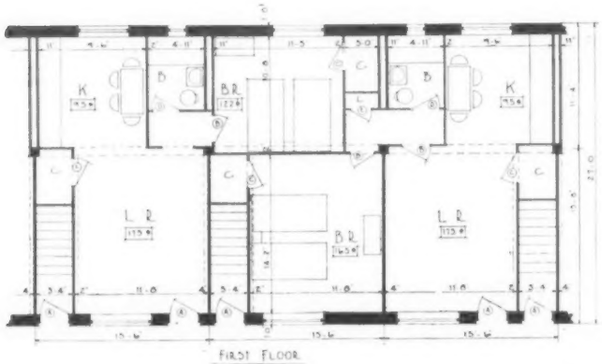


3- AND 4-ROOM HOUSES IN THREE STORIES



TOTAL GROSS AREA (3 FLOORS)
PER UNIT: 3767 SQUARE FEET

AVERAGE GROSS AREA
PER ROOM: 209 SQUARE FEET

(INTERLOCKING 3-ROOM HOUSES
CAN BE USED ON FIRST FLOOR)

CHARACTERISTICS OF EACH TYPE

(1) **Apartment house type:** Sometimes referred to as the multi-story dwelling. Usually three and four stories in height depending on local conditions. Preferable on expensive land because of room density per acre. Desirable where tenants seek complete services and communal provisions. Individual garden space lacking. Preferred by many tenants because responsibility ceases at door of apartment. Possible savings in construction costs because of repetition of units. More desirable for small units than for larger ones. Lack of soundproofing.

(2) **Flat house plan type:** Usually two stories in height. Sometimes very efficient on matters of maintenance. Construction cost comparable to apartment house type. Desirable in communities where tenants enjoy some garden and lawn facilities.

(3) **Row house plan type:** Desirable where tenants seek gardening and lawn facilities; the more private yard, the less cost for general landscape upkeep. Most privacy. Most expensive kind of housing, figured in terms of original construction cost per room, but lowest in maintenance costs. Either one or two stories in height. Basement a serious problem to be considered carefully. This type of building most fitting on relatively inexpensive land. Low density in rooms per acre. Privacy of sleeping quarters on the second floor an advantage.

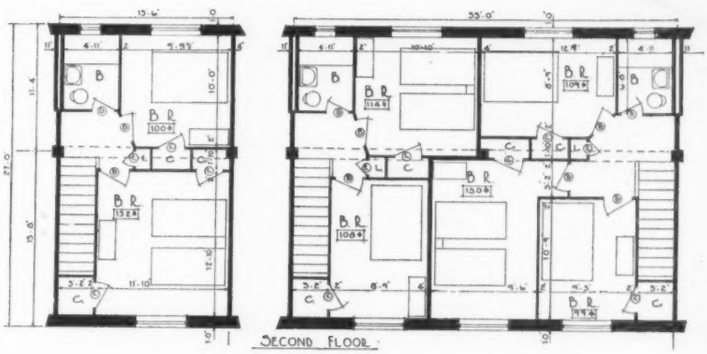
(4) **Gallery plan type:** Sometimes affected by local building code regulations. Generally used as a special feature in connection with a developed plot plan. Considered characteristic of warm climate. Living and bedrooms on opposite sides of gallery.

(5) **Combination flat and row house type:** Usually three stories in height with flat on first floor and row house on upper two floors. For use in communities where a certain amount of privacy is demanded by tenants. Most efficient unit for maintenance costs. Desirable where land costs are fairly inexpensive. High density per acre.

4-ROOM ROW HOUSE

TOTAL GROSS AREA
PER UNIT: 837 SQUARE FEET

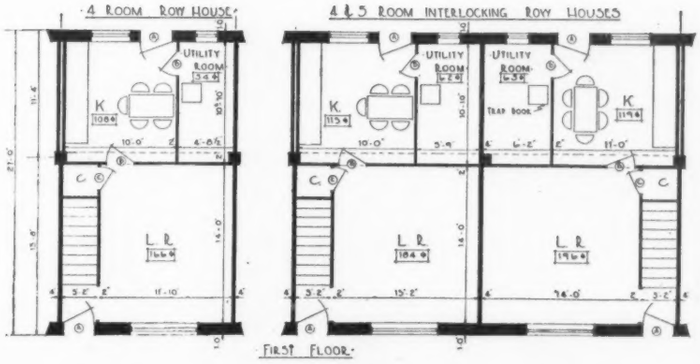
AVERAGE GROSS AREA
PER ROOM: 209 SQUARE FEET

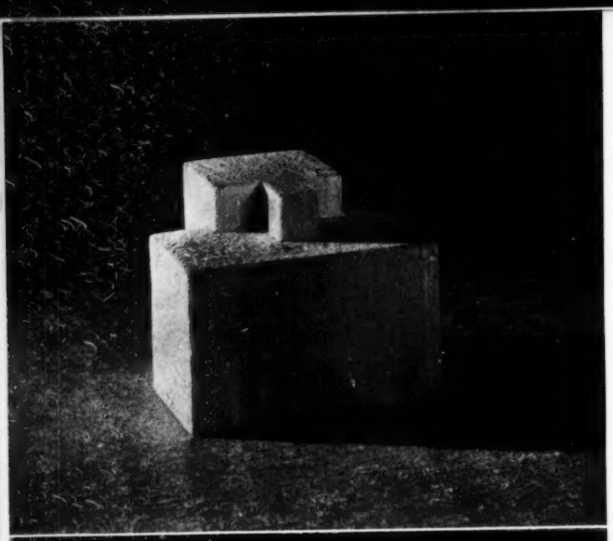


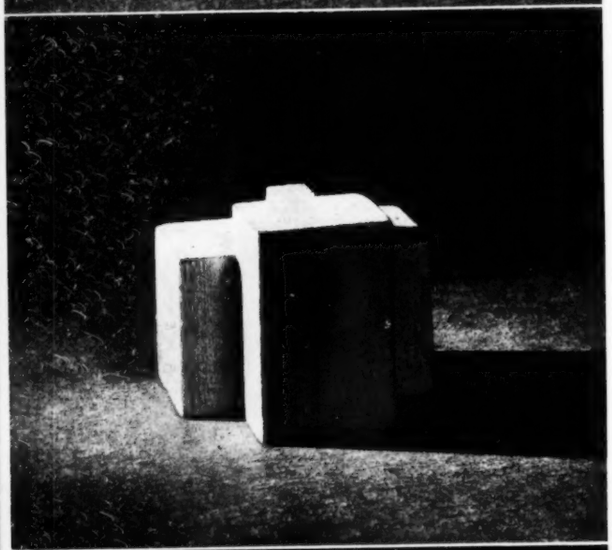
4-5-ROOM ROW HOUSE

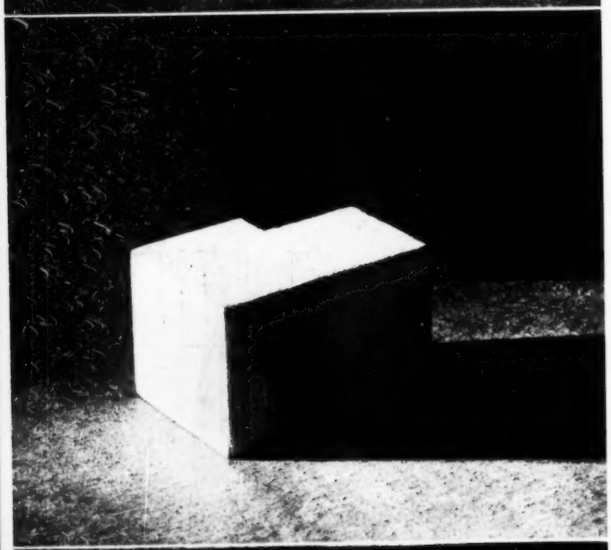
TOTAL GROSS AREA
PER UNIT: 1890 SQUARE FEET

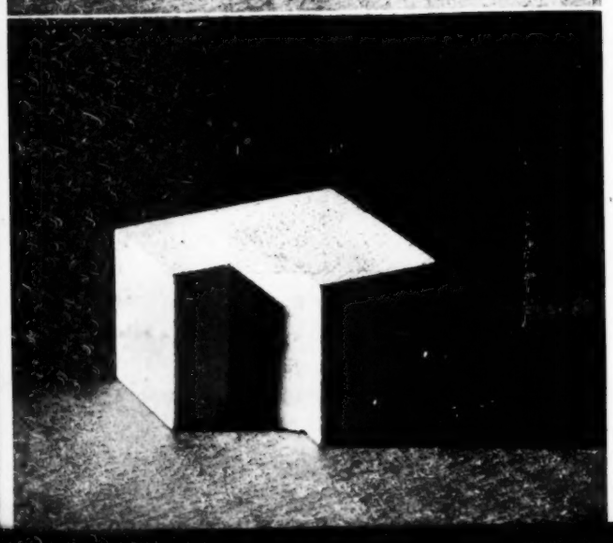
AVERAGE GROSS AREA
PER ROOM: 210 SQUARE FEET











APARTMENT HOUSE PLANNING REQUIREMENTS

INCLUDING BASIC DIMENSIONS

The accompanying check list of requirements for apartment house planning was prepared in answer to a demand for a listing of the essentials of plan arrangement and equipment. It is intended as a supplement to the studies undertaken by the Housing Division of the Public Works Administration.

Low-cost housing, if attained under normal conditions of professional practice, demands economy. Lowering the cost of housing need not be attained by the substitution of cheapness but by consideration of approved planning and construction methods that eliminate waste, reduce the necessity for repair to a minimum, and with recognition of efficiency, convenience and pleasantness.

NEIGHBORHOOD LOCATION

EASY ACCESS TO SCHOOLS, CHURCHES, SHOPPING CENTERS AND TO PLACES OF ENTERTAINMENT.

REASONABLE DISTANCE FROM PLACE OF EMPLOYMENT.

TRANSPORT FACILITIES TO PLACE OF EMPLOYMENT.

NEIGHBORHOOD STORES IN CLOSE PROXIMITY AND IN A ZONED LOCALITY.

For each one thousand people there is needed about 300 feet of business frontage. This includes central shopping district and neighborhood store area.

APARTMENT OR HOUSE LOCATION PRIMARILY RESIDENTIAL, PROTECTED BY ZONING REGULATION.

It has been found generally necessary that zoning regulations be supplemented by deed restrictions. Deed restrictions should be carefully drawn and should apply to every lot, whether sold or unsold. (See Zoning Regulations, U. S. Department of Commerce.)

RESIDENTIAL LOTS SHOULD BE NOT LESS THAN 85 FEET IN DEPTH.
ADJACENT PLAYGROUNDS FOR CHILDREN AND ADULTS. PARK WITHIN 5 MINUTE WALK.

TO SECURE MAXIMUM EFFICIENCY, NEIGHBORHOOD UNITS SHOULD NOT EXCEED 160 ACRES IN AREA NOR BE MUCH LESS THAN 100 ACRES.

PREFERRED STREETS RUN NORTHEAST BY SOUTHWEST AND SOUTHEAST BY NORTHWEST TO ATTAIN UTMOST ADVANTAGE OF SUNSHINE AND NO ROOMS OF DUE NORTH EXPOSURE.

ROOF TERRACE REACHED BY SUN'S RAYS BUT PROTECTED FROM COLD WINDS.

To encourage children, elderly people and the sick to get out-of-doors on sunny days in winter.

STREET TREES, GRASS STRIPS AND PARKS WITHIN THE HOUSING GROUP.

GROUNDS LANDSCAPED.

LOCATION ON MINOR SIDE STREET.

NO HOUSING SHOULD BE UNDULY NEAR RAILROAD TRACKS, AVIATION FIELDS, PUBLIC GARAGES, MARSHES OR NOXIOUS INDUSTRIES.

ELEMENTARY SCHOOLS WITHIN A RADIUS OF NOT MORE THAN ¼ MILE.

STEEP SLOPES SHOULD BE AVOIDED AS ADDING UNDULY TO THE COST OF BUILDING AND DEVELOPMENT.

EXAMINE SUBSOIL TO DISCOVER EFFECT ON DRAINAGE, LIABILITY TO DAMPNESS OF FOUNDATIONS.

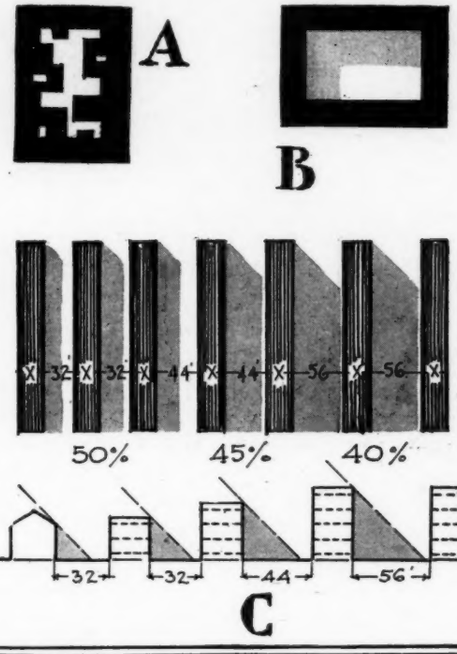
EXPOSURE TO PREVAILING WINDS OF SUMMER AND WINTER, CONSIDERED AS AFFECTING CLIMATIC AMENITIES.

Formerly the ground area not occupied by buildings (usually kept down to the minimum permitted by local building codes) consisted of backyards and courts; this, of course, meant that the buildings themselves used about eighty per cent of the land. In current project plans approximately 25 per cent of the land is built on. The other 75 per cent is used for lawns, gardens, play spaces and the like. Landscaping, therefore, is now an integral part of the entire scheme and must be studied with the same care given to the layout of the buildings.

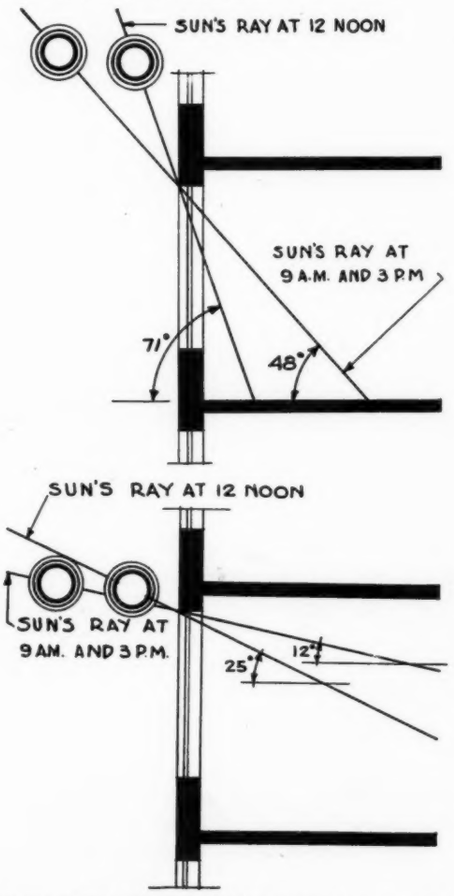
"There is a definite tendency to make individual blocks longer than formerly. Blocks up to 1,000 feet or more in length are now not uncommon. Pedestrian crossings are sometimes provided in the middle of long blocks on the principle that it is not inconvenient to drive all the way around, but that it may be a serious inconvenience to walk, particularly for school children."*

SAFETY OF CHILDREN INSURED BY THE STREET PLAN THAT MAKES IT UNNECESSARY FOR A CHILD TO CROSS A STREET AT GRADE IN ORDER TO GET TO SCHOOL OR PLAYGROUND.

* Planning for Residential Districts. The President's Conference on Home Building and Home Ownership. p. 55.



(A, B AND C) COMPARISON OF OLD AND NEW METHODS OF BLOCK DIVISION. (C) RELATIVE COVERAGES AND SUNLIGHT EXPOSURE FOR TWO-, THREE- AND FOUR-STORY DWELLINGS. SPACING IS INDICATED FOR DWELLINGS FACING SOUTH IN ORDER TO PROVIDE FULL SUNLIGHT AT 45 DEGREES. H. WRIGHT.



COMPARISON OF SUNLIGHT ENTERING A ROOM AT SUMMER AND WINTER SOLSTICE, DUE SOUTH EXPOSURE.

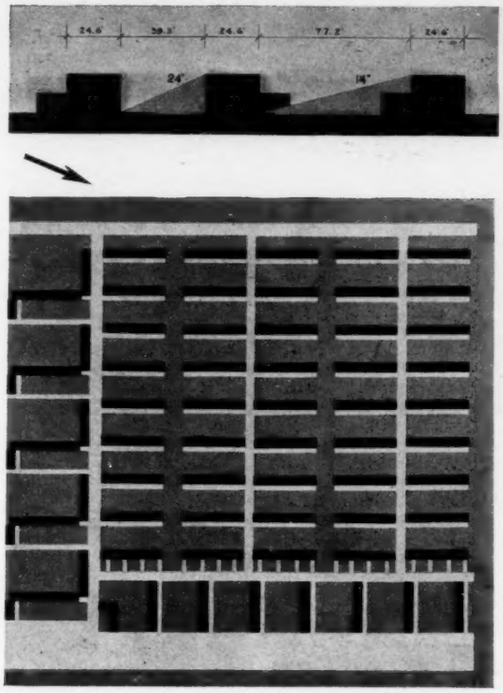
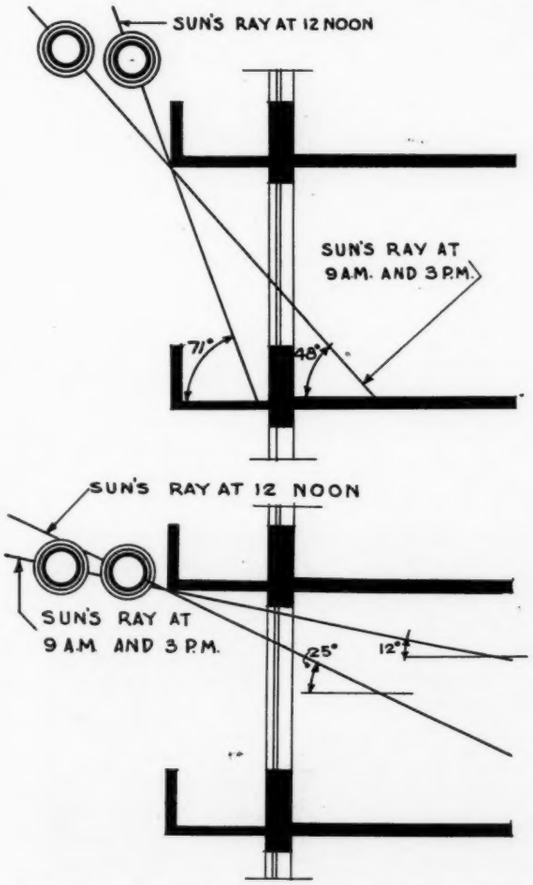


DIAGRAM OF HOUSING OF MINIMUM AND MAXIMUM DESIRED SPACING. ORIENTATION PERMITS FULLEST EXPOSURE TO EAST, SOUTH AND WEST. FOOTPATHS PARALLEL BUILDINGS. THERE IS NO MAIN TRAFFIC CROSSING THE HOUSING AREA.



SUMMER AND WINTER SUNLIGHT ENTERING A ROOM WITH PROJECTING BALCONY.

NEIGHBORHOOD LOCATION (CONTINUED)

THERE SHOULD BE NO THROUGH TRAFFIC CROSSING THE APARTMENT DEVELOPMENT.

The occupants will vary considerably with the location of a project, and therefore successful operation will necessarily be the result of careful study of factors which govern the mode of living expected by prospective tenants.

ORIENTATION

THE FACING OF ROOMS FOR LIVING AND SLEEPING SHOULD BE SUCH AS TO SECURE A MAXIMUM OF SUNLIGHT AND SUNSHINE IN ALL ROOMS.

This is attained by the design of plot plan or layout of property—that houses will have most desirable orientation.

"No room should have solely a north exposure unless its window area is increased by at least 50 per cent over the normal amount."*1

Authorities recommend that row houses extend northeast by southwest and southeast by northwest so as to obviate rooms of due north exposure.

THERE SHOULD BE AT LEAST ONE WINDOW IN EACH ROOM.

Preferably two or more opening directly on an open space. "The total window area should be at least fifteen square feet with window heads as near ceiling as possible." *1

"Tentative standards of the International Congress on Illumination held at Lake Saranac in 1928 suggest that at least some of the sky should be visible from the table height over a considerable part of the room's area and that sunlight should be able to penetrate to at least half of the depth of the room." *3

Where sun is to south or west in warm climate it is desirable to use awnings, easily raised or lowered and readily removed at close of season.

NORTH ROOMS SHOULD HAVE ADDITIONAL WINDOWS TO EITHER EAST OR WEST. THE NORTH ROOMS SHOULD THEREFORE BE CORNER ROOMS.

THE NATURAL CONSTRUCTION AND SIMPLICITY IN ARCHITECTURE ARE PREFERRED TO ORNAMENTATION.

COLOR, SKILLFULLY DETERMINED, IS A MOST DESIRABLE ASSET IN ATTAINING GOOD APPEARANCE. THIS COLOR MAY BE NATURAL AND APPLIED.

FOR BEDROOMS, PROVIDE ADEQUATE WALL SPACE FOR BED LOCATION, PREFERABLY TWIN BEDS, AND WITH POSSIBILITIES FOR CROSS-VENTILATION.

ROOMS OF AMPLE SIZE TO ACCOMMODATE PLACING OF FURNITURE FOR MOST CONVENIENT USE AND WITH AMPLE WALKING, SITTING AND WORKING AREA.

BUILDING DESIGN *2

"The degree to which design of housing should be influenced by the present living habits of the proposed tenants is a very debatable question. Experienced social workers have come to the conclusion that it is not practical to formulate housing plans by asking the prospective tenants what they want. The families usually do not know what they want or their demands are so varied and out of reason that they form no sane basis for design. The most that can be done is to study:

*1 Housing Objectives and Programs. The President's Conference on Home Building and Home Ownership. p. 155.

*2 Outline of Survey and Planning Procedure for Low-Cost Housing. National Association of Housing Officials, Chicago. p. 9.

*3 The Home and The Child. The Century Company, New York.

BUILDING DESIGN (CONTINUED)

"DISTRIBUTION OF FAMILY SIZE.

Studies serve as a means of determining the number of dwelling units of various sizes to be provided.

"DESIGN BASED ON STUDIES OF EFFICIENT HOME ECONOMICS.

This will entail an examination of recommendations of qualified bodies regarding minimum efficient room sizes and domestic equipment.

"The experience and opinions of social welfare workers who have intimate contact with the low wage-earning class and whose conception of minimum decent housing is based upon practical experience will be a valuable check on over-ambitious architects or others." *1

TYPICAL DEFECTS OF EXTERIOR DESIGN:

Absence of relation between exterior treatment and interior plan requirements.

Decorative details unrelated to structural frame.

Faked roofs and gables with no relation to the actual roof.

Chimneys applied as decoration without fireplaces and fireplaces without chimneys.

Mixture of stone and brick for antique decorative effect.

Highly decorative false fronts to street and with a more commendable restraint in treatment of ends and rear.

Discordant mixture of a large variety of materials on face of building.

Over-emphasis of picturesque quality.

False windows.

The emphasis on scenic qualities is a passing fad that will detract from the permanent value of the property.*2

BUILDING SHOULD BE DESIGNED AND LOCATED SO AS TO MAKE POSSIBLE MAXIMUM SUNNING AND NATURAL LIGHTING IN ALL ROOMS.

THERE SHOULD BE DIRECT SUNSHINE AT SOME TIME OF DAY IN EACH ROOM THROUGHOUT THE YEAR. NO ROOM SHOULD HAVE ONLY A NORTH EXPOSURE.*1

COVERED PORCHES SHOULD NOT BE PLACED OR PROJECT SO AS TO GREATLY REDUCE NATURAL LIGHTING OF A ROOM.

INTERIORS

ROOM ARRANGEMENT SHOULD BE SUCH AS TO ALLOW FOR EASE AND COMFORT OF LIVING, CARE OF HOUSEHOLD WORK, CARE OF CHILDREN, ENTERTAINING.

Waste motion and labor can be reduced by conforming to experience-principles in planning.

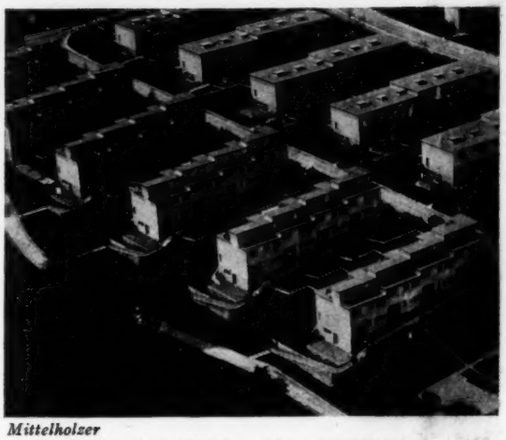
THERE SHOULD BE READY ACCESS FROM ROOM TO ROOM BUT EACH ROOM SHOULD HAVE POSSIBILITY FOR UNDISTURBED USE WHEN DESIRED.

ACCESS TO BATHROOM IS PREFERABLY FROM HALLWAY.

ALL ROOMS SHOULD HAVE ADEQUATE NATURAL VENTILATION AND CROSS-VENTILATION.

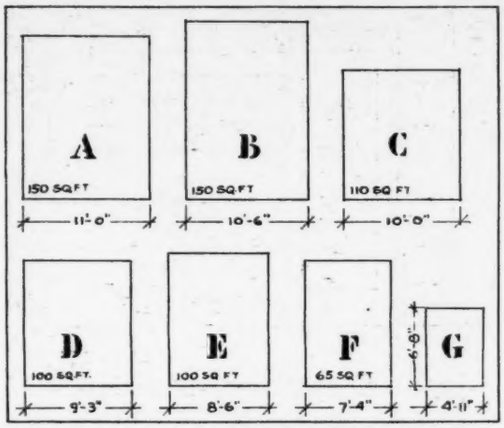
Secured by windows on opposite or adjoining sides or by doors that permit through ventilation.

*1 The Home and The Child. The Century Company, New York. p. 17.
*2 House Design, Construction and Equipment. The President's Conference on Home Building and Home Ownership, Washington, D. C. p. 7.

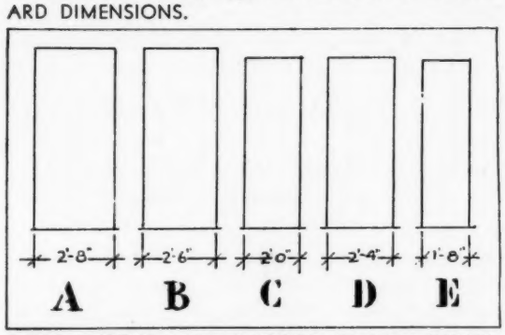


Mittelholzer
LOW-COST HOUSING ON IRREGULAR SITE. BLOCKS ARE FROM NORTHEAST TO SOUTHWEST SO AS TO ATTAIN UTMOST IN SUNLIGHT EXPOSURE.

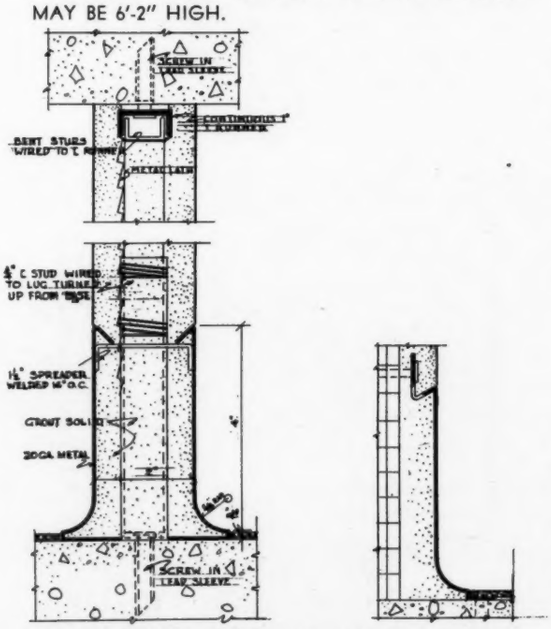
ROOM FURNISHED TO MEET SPECIAL REQUIREMENTS OF CHILD.



ROOM SHAPES AND MINIMUM SIZES. THESE MINIMUM WORKABLE AREAS CANNOT BE REDUCED WITHOUT AFFECTING RENTABILITY AND CONVENIENT USE. THEY GENERALLY SHOULD BE INCREASED. (a) APARTMENT LIVING ROOM, (b) HOUSE LIVING ROOM, (c) MAIN BEDROOM, (d) SECOND BEDROOM, (e) HOUSE SECOND BEDROOM, (f) KITCHEN, (g) BATHROOM OF STANDARD DIMENSIONS.



DOOR WIDTHS RECOMMENDED BY PWA (HOUSING DIVISION). (a) ENTRANCE, (b) BEDROOM, (c) BATHROOM, (d) CLOSET, (e) LINEN CLOSET. DOOR HEIGHTS, 6'-4", 6'-6", 6'8"; CLOSET DOORS MAY BE 6'-2" HIGH.



PROFILE OF WALL BASE—20-GAUGE STEEL, FOR 2" SOLID PARTITIONS AND ALL WALLS. TECHWOOD HOUSING PROJECT, ATLANTA, GEORGIA.

INTERIORS (CONTINUED)

THE SUBDIVISION OF APARTMENTS AND HOUSES SHOULD PERMIT FLEXIBILITY OF ARRANGEMENT.

Making possible alteration or extension to meet increased or changed family needs. Use should be made of wall sections that permit re-use in the new location.

1. MINIMUM ROOM SIZES (Recommended by PWA, Housing Division):

	Minimum Dimension	Minimum Area Square Feet
Apartment living room	11'0"	150
House living room	10'6"	150
Main bedroom	10'0"	110
Second bedroom	9'3"	100
Kitchen	7'4"	65
House second bedroom	8'6"	100
Bathroom—standard dimensions	4'11" x 6'8"	

2. RECOMMENDED DOOR SIZES:

	Minimum Width	Desirable Width
Entrance door	2'8"	2'10"
Bedroom door	2'6"	2'6"
Bathroom door	2'0"	2'4"
Closet door	2'4"	2'4"
Linen closet door	1'8"	2'0"

Note: All doors 2'6" or more in width should be 1¾" thick.

TEMPERATURE AND HUMIDITY

RECOMMENDED ROOM TEMPERATURES AND HUMIDITY.

"1. **Temperature**—The temperature in rooms during periods of occupancy should register preferably from 60 to 70 degrees Fahrenheit at all times, except when the outside temperature exceeds 60 degrees Fahrenheit. This does not apply to rooms used for special purposes such as industrial places where high or low temperatures are essential and unavoidable.

"2. **Humidity**—The relative humidity in occupied rooms should not exceed 70 per cent, except when the outside-bulb temperature exceeds 59 degrees. In no case, however, should the wet-bulb temperature exceed 78 degrees." *

FLOORS

FLOORS SHOULD BE FIRM, COMFORTABLE TO WALK AND STAND ON AND EASILY KEPT CLEAN.

COLOR OF FLOORS SHOULD HARMONIZE WITH COLOR SCHEME OF ROOM.

If of wood, floorboards should be kiln dried hardwood.

BATHROOM FLOORS

(1) preferably tile; (2) may be continuous linoleum, rubber or cork in plain color; (3) cement finish over concrete for lowest cost, with dampproofing and cement hardener.

KITCHEN FLOORS OF LINOLEUM WITHOUT PATTERN.

LINOLEUM SHOULD BE LAID OVER A LAYER OF FELT.

CONSTRUCT WALLS AND FLOORS AS NEARLY INTEGRAL AS POSSIBLE.

FOUNDATIONS AND CELLAR FLOORS (WHERE THEY OCCUR) SHALL BE DAMPPROOF, SOUND AND DURABLE.

INSULATE BUILDING AGAINST DAMPNESS, HEAT, COLD AND SOUND.

* Fresh Air and Ventilation. By C.-E. A. Winslow. E. P. Dutton & Company, New York.

CELLARLESS APARTMENTS

GAINS FROM OMISSION OF CELLAR:

Lower construction cost, reduced fire hazard, improved dwelling sanitation.

LOSS:

Storage space, laundry facilities must be provided at ground level; heating space in utility room at first floor level.

A report of the National Board of Fire Underwriters, released in 1926, showed that 70 per cent of all dwelling fires started in cellars.

Some cities require cellar excavation. Pittsburgh, Pennsylvania, does not require cellar, neither do building codes of New York City, Chicago and other large American cities.

Building Code Committee, U. S. Department of the Interior, For Minimum Building Requirements For Dwellings, does not require cellars if the space below the first floor joists is protected.

KITCHEN

"The kitchen—the domestic workshop—will be so designed as to make possible the preparation and serving of food, with its ancillary labors, with the least possible waste of time and effort, and with a minimum of fatigue." *1

'Equipment required in every kitchen: a stove, sink with water supply, work tables or work surfaces at satisfactory heights, refrigerator, adequate space for articles to be stored, located as nearly as possible where these will be used. This equipment should be selected and arranged with the different kinds of work which must be carried on in the kitchen in mind." *1

(1) The preparation of foods for cooking comes first. Vegetables are prepared at the sink and should be stored nearby. Short mixing jobs are done near the stove, and longer jobs at a work table which should be located near the main storage center, so staple supplies will be at hand, and if possible, the refrigerator should be nearby.

(2) The cooking is done at the stove. It should be well lighted and easily reached from food preparation and service centers, and the utensils used there should be stored close at hand.

(3) The serving center is a collecting station between the stove, refrigerator, and the dining table. If there is a cupboard between the kitchen and the dining room, the lower shelf serves this purpose. If not, a wheel table makes a desirable serving surface for the housewife without a maid. The food can be arranged upon it and wheeled into the dining room at one trip. If families entertain much there should be facilities for increasing the surface by a hinged shelf or a movable table.

(4) For the cleaning up or the dishwashing center a place for soiled dishes, sorting, washing, rinsing, and draining is needed. A satisfactory dishwasher is the ideal solution, located away from the utility sink, but as yet this is too costly for most homes. Next best is a separate sink planned for dishwashing. For the lower-priced homes the all-purpose sink should be selected and located with the different needs in mind.*2

INSTALL SINK WITH DRAIN BOARD TO THE LEFT AND A FLAT SURFACE OR DRAIN BOARD AT RIGHT, BOTH AT HEIGHT OF TOP EDGE OF SINK.

THE DRAIN BOARD SHOULD BE AT LEAST 32 INCHES LONG AND THE STACKING SURFACE AT LEAST 36 INCHES.

THERE SHOULD BE AN OPEN SPACE UNDER THE SINK.

Some space above the sink should be available for narrow shelves for storage of cleaning materials.

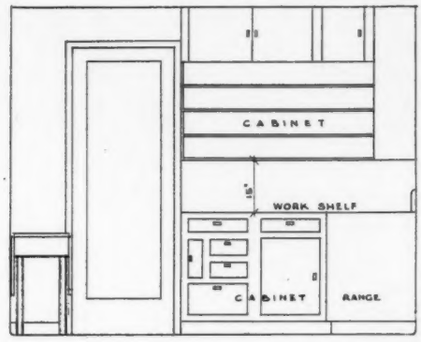
THE SINK SHOULD BE WELL LIGHTED.

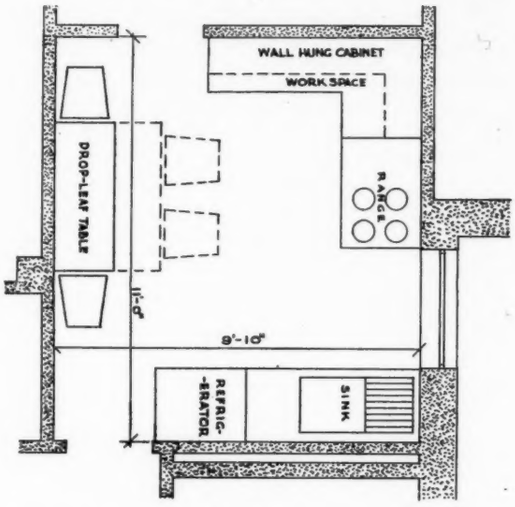
With a window preferably in the wall at right angles, so placed as to throw light on the sink. If on the same wall as the sink, it should be placed directly over the sink but with protection from glare.

ARTIFICIAL ILLUMINATION SHOULD BE SO PLACED, AND OF SUFFICIENT HEIGHT, TO GIVE GOOD LIGHT ON THE WORK AT THE SINK WITHOUT THROWING A SHADOW.

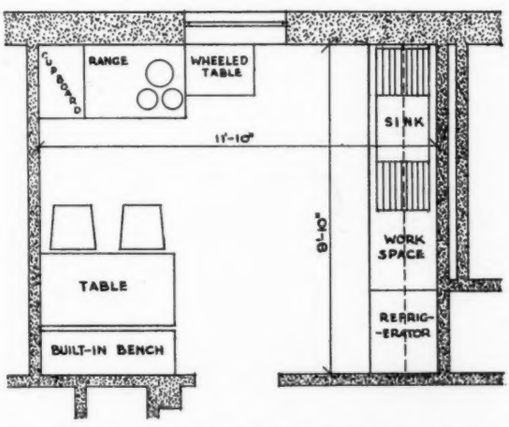
*1 Housing Objectives and Programs. The President's Conference on Home Building and Home Ownership. p. 156.

*2 Planning the Kitchen. By Dr. Louise Stanley, Chief, Bureau of Home Economics, U. S. Department of Agriculture, Washington, D. C.

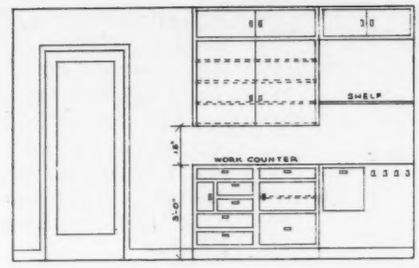


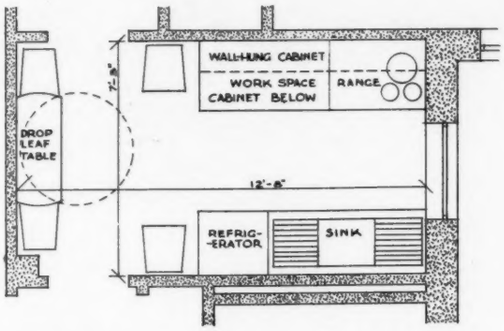


KITCHEN ARRANGEMENTS SHOWN ON THIS PAGE WERE PREPARED UNDER THE DIRECTION OF DR. LOUISE STANLEY, DIRECTOR OF HOME ECONOMICS FOR U. S. DEPARTMENT OF AGRICULTURE. THE PLANS WERE SELECTED FROM HOUSING DIVISION PWA "SAMPLE PLANS." THE KITCHEN, IN ALL CASES, ADJOINS BATHROOM TO REDUCE COST OF PLUMBING INSTALLATION. THERE IS A DINING TABLE IN ALL KITCHENS. PLANNING OF EQUIPMENT CONFORMS TO NORMAL METHODS FOR FOOD PREPARATION.

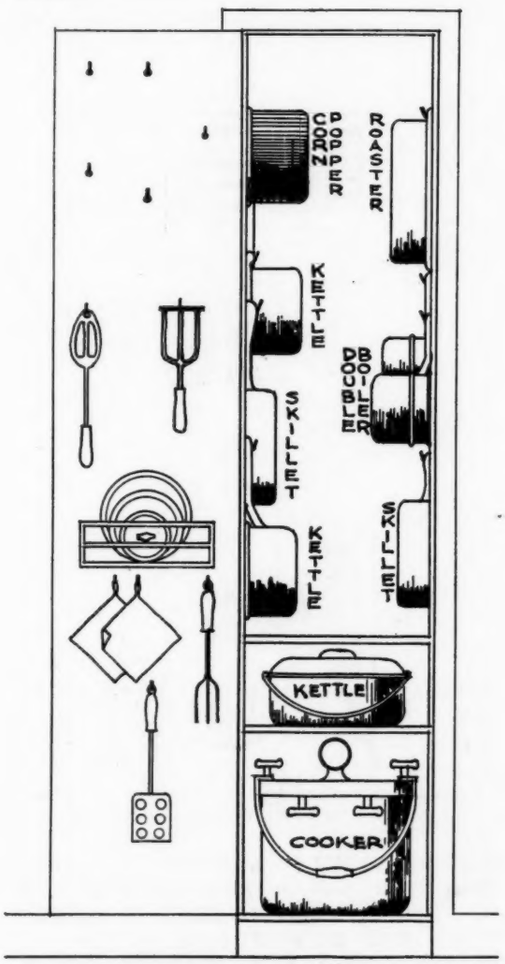


KITCHEN WITH WORK AREAS AT RIGHT-ANGLE WALLS; CUPBOARD FOR KETTLES AT SIDE OF RANGE; DINING TABLE AT MOST CONVENIENT LOCATION.





KITCHEN OF SMALL SIZE; RANGE ON OPPOSITE WALL FROM SINK; LIGHT ON SINK FROM LEFT. WORK SPACE INDEPENDENT OF PASSAGE BETWEEN DOORS.



CLOSET FOR KETTLES AND COOKING UTENSILS. APPROVED LOCATION AT SIDE OF RANGE. HOOKS AND RACK ON DOOR.

KITCHEN (CONTINUED)

THE STOVE MAY BE AT RIGHT ANGLES TO THE SINK, OR DIRECTLY ACROSS FROM THE SINK IF THE KITCHEN IS NARROW.

SHELVES OR A CABINET FOR STORAGE OF UTENSILS USED AT THE STOVE SHOULD BE WITHIN EASY REACH OF THE COOKING SURFACE.

THE WORK TABLE FOR MIXING, CAKE MAKING AND THE LIKE SHOULD BE OF SUFFICIENT HEIGHT TO PERMIT WORK WHILE SITTING, AND SHOULD HAVE KNEE SPACE BELOW.

Staple articles should be within reach of the worker so seated. This work table should preferably be between the refrigerator and stove.

THE REFRIGERATOR SHOULD, FROM THE POINT OF VIEW OF CONVENIENCE, BE AS NEAR AS POSSIBLE TO BOTH WORK TABLE AND STOVE.

Since the wall space is needed for placing equipment, **the rectangular kitchen makes possible a more satisfactory arrangement than a square one.**

A kitchen should be at least 6½ feet wide, otherwise only one side wall can be used for efficient placing of equipment.

The architect can contribute much to efficiency of the kitchen by specifying convenient heights for working surfaces and by planning storage spaces so as to minimize stooping and stretching.

SINK AND WORK SURFACES FOR STANDING SHOULD BE FROM 34 TO 36 INCHES.

KITCHEN WINDOWS LOCATED SO AS TO OVERLOOK CHILDREN'S PLAYGROUND.

GROUP KITCHEN EQUIPMENT ACCORDING TO THE PURPOSES IT IS TO SERVE:

Elements arranged along the walls to furnish a nearly continuous working surface.

HEIGHT OF WORKING SURFACE ADJUSTED TO INDIVIDUAL WORKERS.

WORK AREAS NOT SEPARATED BY DOORS.

STOVE BETWEEN SINK AND WORK TABLE UNITS.

REFRIGERATOR CLOSE TO WORK TABLE AND SERVING AREA.

SINK AND SERVING UNITS COMBINED SO THAT THE SERVING COUNTER MAY ALSO BE A DRAIN BOARD.

SINK AND SERVING UNIT ADJACENT TO DINING AREA OF KITCHEN.

PROVISION FOR A STOOL TO BE USED AT SINK.

HOOD OVER STOVE WITH VENT TO CARRY OFF FUMES AND HEAT.

VENTILATING FAN IS DESIRABLE FOR WARM CLIMATES AND WHERE THERE IS NO CROSS-VENTILATION.

Location near ceiling on opposite wall from window.

BATHROOM

PROVIDE SHALLOW CABINET RECESSED IN WALL.

Mirror may be on door but this is not preferred; overhead illumination; shelves in this cabinet should be removable and adjustable as to distance apart; shelf for drinking glasses.

BATHROOM MIRROR IS MOST CONVENIENT IF PLACED DIRECTLY ON THE WALL, RATHER THAN ON THE DOOR OF A CABINET.

SHALLOW DRAWER FOR TUBES OF DENTAL PASTE, OINTMENT AND SMALL FLAT ARTICLES.

RACK ON WALL OR IN VENTILATED WALL CABINET FOR TOOTHBRUSHES.

RODS FASTENED TO WALL FOR TOWELS, WASHCLOTHS, ETC.

SPACE IS DESIRABLE FOR WHEELED TABLE FOR CARE OF INFANT; SHELF BENEATH FOR TRAYS AND BASKETS.

MINIMUM BATHROOM WINDOW, 1'-8" BY 3'-0".

BATHROOM (CONTINUED)

SEPARATE AND SAFE SPACE FOR PRESCRIPTION MEDICINES AND POISONOUS SUBSTANCES; NOT WITH TOILET SUPPLIES.

TOILET CABINET IS MORE CONVENIENT AT ONE SIDE OF THE LAVATORY, RATHER THAN DIRECTLY ABOVE IT.

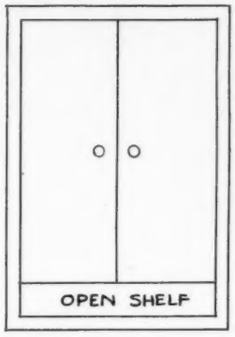
It is desirable to have some storage space for towels and washcloths to supplement general supply in linen closet.

SPACE FOR HAMPER TO STORE SOILED TOWELS, LINEN, ETC.

BATHROOMS AND TOILETS SHOULD HAVE OUTSIDE WINDOWS.

PLUMBING FIXTURES TO BE SANITARY, EASILY FLUSHED, PROPERLY VENTED TO ROOF.

PIPES TO BE NON-CORROSIVE; WITH TRAPS, ACCESSIBLE.



TOILET CABINET. PREFERABLE LOCATION AT SIDE OF LAVATORY; FIXED MIRROR OVER WASH BASIN; THIS CABINET SHOULD HAVE ADJUSTABLE SHELVES; SHELF BELOW FOR DRINKING GLASSES.

CLOSETS *

A SEPARATE CLOSET FOR EACH PERSON IS DESIRABLE.

ATTACH FULL-LENGTH MIRROR TO BEDROOM WALL IN PREFERENCE TO DOOR.

The full-length mirror should be at least 14" wide.

SLIDING TRAYS PREFERRED FOR STORING FOLDED GARMENTS.

PROVIDE CLOSET IN LIVING ROOM FOR STORAGE OF FOLDING BED WHEN LIVING ROOM IS USED AS AUXILIARY BEDROOM.

A CLOSET OPENING FROM A LIVING ROOM SHOULD BE OF SUCH DIMENSIONS THAT IT CAN BE USED FOR SEVERAL PURPOSES, SUCH AS STORING A BED, SEWING EQUIPMENT, CHILD'S PLAYTHINGS, GAME BOARDS, SMALL MUSICAL INSTRUMENTS; ALSO BED CLOTHING AND GARMENTS.

PASSAGE TO BATHROOM OR ENTRY DOOR SHOULD NOT BE THROUGH LIVING ROOM WHEN INTENDED FOR REGULAR USE AS BEDROOM.

STORAGE AREA ALLOWED FOR THE BED IS 2 FEET IN DEPTH, AND 5 FEET IN WIDTH.

PROVIDE CLOSET FOR BED CLOTHES AND LINEN.

Depth of 18 to 24 inches accommodates articles commonly stored in bedding closets, including sheets and spreads as folded after ironing. If bed coverings and pillows are stored elsewhere, the closet may be only 14 inches in depth. A desirable length is 36 inches. This accommodates most blankets folded once. The distances between shelves or trays that are 15 to 18 inches wide are 10 inches. If shelves are 24 inches wide, they should be at least 12 inches apart. A sorting shelf may be from 30 to 40 inches from the floor.

LOCATE CLOSETS TO SERVE NEEDS MOST CONVENIENTLY.

Closet for outdoor wraps near entrance door and reached without passing through rooms.

PROVIDE SEPARATE CLOSET FOR CHILDREN'S WRAPS, EQUIPPED WITH LOW HOOKS, RODS AND LOW SHELVES.

Height: 3'-2" to 4'-6".

CLOTHES CLOSETS SHOULD BE EQUIPPED WITH RODS AND A SHELF FOR HATS.

Closet should be of depth to take easily clothes hangers with clothes on them.

CLEANING CLOSET AT ENTRY TO KITCHEN OR IN KITCHEN NEAR ENTRANCE DOOR.

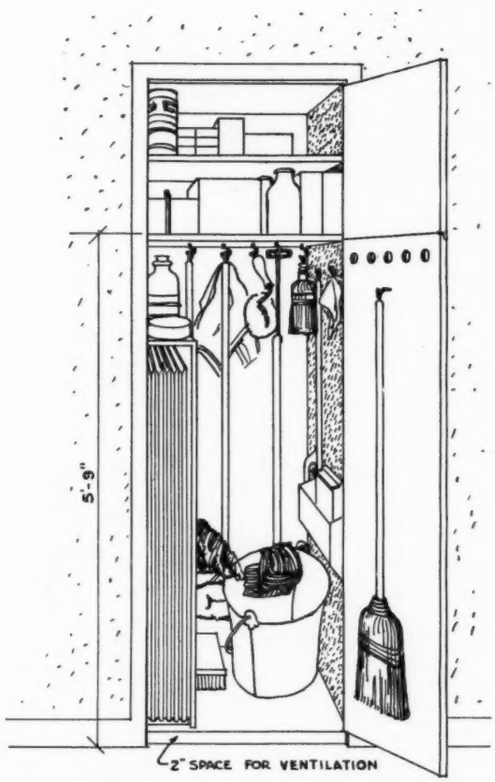
LINEN CLOSETS LOCATED IN HALLWAY NEAR TO BATHROOM.

Subdivided for convenient use; sorting shelf.

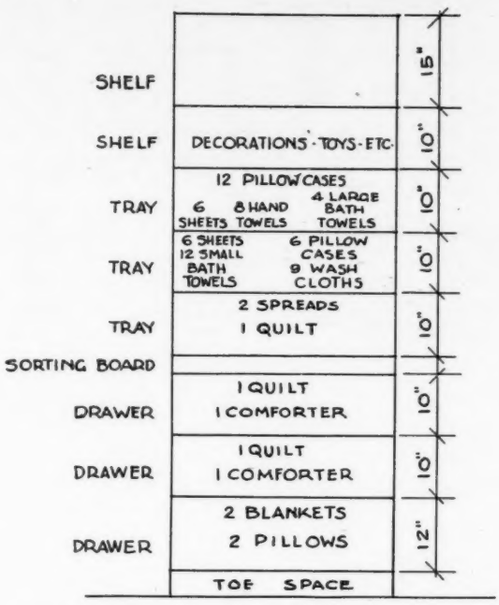
ALL CLOSETS SHOULD HAVE DOORS, PREFERABLY THE WIDTH OF CLOSET SPACE.

There should be knobs on inside as well as outside so that closet doors can be opened by children from inside.

* Information on closet planning compiled from "Closets and Other Storage Arrangements for the Farm Home" by Maud Wilson, U. S. Department of Agriculture.



CLEANING CLOSET (SIZE, 14" x 27" OR 17" x 25"). DIMENSIONS AND ARRANGEMENT BASED ON EQUIPMENT AND SUPPLIES FOUND IN REPRESENTATIVE HOME OR APARTMENT. 5 HOOKS FOR LONG ARTICLES; 4 HOOKS FOR SHORT ARTICLES. UPPER SHELF 9" DEEP; LOWER SHELF 14" DEEP. DESIGNED BY MAUD M. WILSON, HOME ECONOMIST.



LINEN CLOSET ARRANGEMENT WITH CAPACITY, DIMENSIONS AND METHOD OF STORING. DESIGNED BY MAUD M. WILSON, HOME ECONOMIST, FOR BUREAU OF HOME ECONOMICS, U. S. DEPARTMENT OF AGRICULTURE.

CLOSETS (CONTINUED)

ARRANGE CLOSETS TO ACCOMMODATE PERSONS OF VARYING HEIGHTS.

Two or more doors for a wide or high closet are more convenient than one door.

VENTILATE CLOSET BY OPENING IN DOOR EXCEPT FOR CEDAR-LINED CLOSET.

It is, of course, desirable to have a window in closet.

PROVIDE ACCOMMODATION FOR FOLDING BEDS.

AUTOMATIC ELECTRIC LIGHT FOR LARGE CLOSETS.

MINIMUM INSIDE DEPTH OF CLOSET, 24".

MINIMUM WIDTH OF OPENING OF CLOSET, 24".

MINIMUM FREE SPACE IN CLOSET OF WALK-IN TYPE, 24" x 24".

The dimensions that follow will aid the draftsman in arranging closets for convenience:

Minimum distance from center of hanger rod to wall:

For adult use	12 inches
For children, 6 to 12 years of age	10 inches
For children, 3 to 5 years of age	8 inches

Distance between floor and top of rod (assuming use of hanger which places top of garment 4 inches from top of rod):

Garments for adults, general use	63 inches
Short coats, skirts	45 "
Evening gowns	72 "
Garments stored in moth bags	72 "
Garments of children, 6 to 12 years of age	45 "
Garments of children, 3 to 5 years of age	30 "

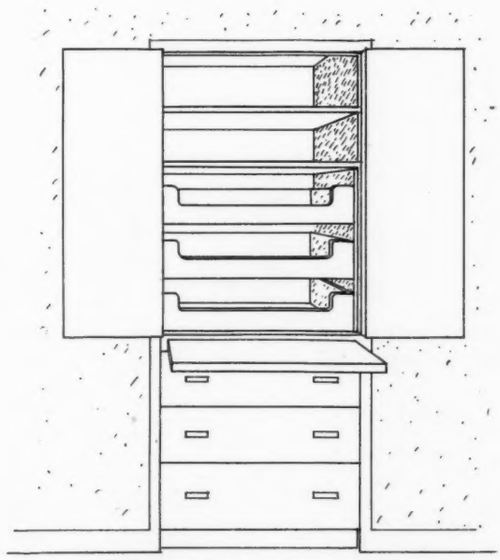
BEDROOM CLOSET, HOOK TO HOOK, 7".

PLAY COATS, SMALL CHILDREN, 9".

HOOKS SHOULD NOT BE PLACED WITHIN 5 INCHES OF THE EDGE OF A DOOR.

HOOKS FOR USE OF SMALL CHILDREN SHOULD NOT BE ABOVE EYE-LEVEL.

The average adult requires bedroom closet accommodation for 12 garments hung on hangers. Accommodation would therefore require 36 inches of rod hanger space and 10 garment hooks; space for 6 pairs of shoes and hat shelf 36" long.



CLOSET FOR BEDDING AND LINEN—FOR STORAGE OF BED LINEN, BED COVERS, AND TOWELS. NOTE SORTING BOARD AT TABLE HEIGHT.

CLEANING CLOSET

PROVIDE CLEANING CLOSET IN KITCHEN OR VESTIBULE.

Dimensions and arrangement of cleaning closet are based on equipment and supplies found in the representative home or apartment. Portable ironing board and table leaves may or may not be included here, depending on whether or not space is found elsewhere. The following over-all dimensions would be considered in providing space for cleaning items:

Vacuum cleaner, 49" high, 16" wide, 14" deep, hose 9' long; step ladder, 49" high, 20" wide, 6" deep; ironing board, 62" high, 16" wide, 4" deep; pail, 13" diameter (over handles), 10½" high; table leaves, 13" wide, 54" high; dust mop, 61" long; mop end, 9" wide; wet mop, 57" long; mop end, 7" wide; wall brush, 60" long, 10" wide, 3" deep; dustpan, 34" long, 13½" wide, 3" deep; broom, 54" long, 14" wide, 2" thick; carpet sweeper, 54" long (box, 14" x 10" x 5"); waxer, head, 9" x 5" x 3".

Lower part of closet should be fitted with hooks for equipment that will hang, while the upper is equipped with shelves. If shelving is extended to ceiling, then provide separate doors for upper and lower sections. Upper shelves should be narrower than lowest one.

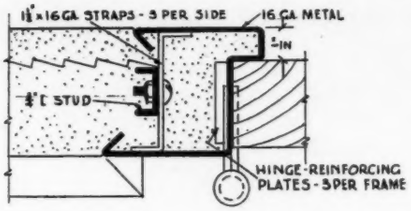
CONSTRUCTION

HOUSES SHOULD BE RESISTIVE TO FIRE.

Public hallways and stair halls should be inclosed and separated from the rest of the floor space by fire-resistant inclosures, also floor surfaces and trim of approved incombustible material. The stairs and stair landings to be of incombustible material.

"Public hall inclosures and walls separating different tenants shall be built not less than 4 inches thick, of solid or hollow brick, building tile, concrete or gypsum blocks, or not less than 3 inches thick of reinforced concrete or solid metal lath or cement plaster; or such other incombustible materials and thickness as shall meet requirements of the partition fire test." *

DIRECT ACCESS TO EXTERIOR DOOR.



SOLID 2" PLASTER PARTITIONS. ¾" CHANNELS SET 16" O. C. INTO CHANNELS AT FLOOR AND CEILING. DOOR FRAME OF 16-GAUGE STEEL. TECHWOOD HOUSING PROJECT AT ATLANTA, GEORGIA.

STAIRWAY

STAIRWAY HANDRAILS AT WALL AS WELL AS STAIR RAILING.

PROVIDE LOW HANDRAILING FOR CHILDREN 24" ABOVE STAIR NOSING.

INSIDE PLAYSPACE FOR CHILDREN.

COOL CLOSETS FOR STORING CANNED FRUITS AND VEGETABLES.

"ALL STAIRS SHALL HAVE TREADS AND RISERS OF UNIFORM WIDTH AND HEIGHT throughout each flight; the rise shall be not more than 7¾ inches and the tread, exclusive of the nosing, not less than 9½ inches.

"STAIRWAYS USED AS REQUIRED MEANS OF EXIT SHALL BE AT LEAST 44 INCHES WIDE between face of wall and an open balustrade. Stair halls with double flight and landing should total 7'-4" width within walls. Handrails attached to walls must not project more than 3½"." *

NO ARRANGEMENT OF TREADS KNOWN AS WINDERS SHALL BE PERMITTED.

STAIRWAYS ADEQUATELY LIGHTED.

EVERY INCLOSED STAIRWAY SHALL BE PROVIDED WITH ADEQUATE SYSTEM OF LIGHTING, arranged to insure reliable operation when through accident or other cause the regular lighting is extinguished.

EXIT DOORWAYS HAVE A CLEAR WIDTH OF AT LEAST 40 INCHES.

CEILING HEIGHTS SHOULD BE NOT LESS THAN 8'-6" HIGH FROM FINISHED FLOOR TO FINISHED CEILING.

WINDOW TYPES recommended permit full area opening or at both top and bottom.

Possibilities for safely washing outside of glass area from room interior.
Provision for screening without interfering with window operation.
Provision for shades and curtains.

LANDSCAPING

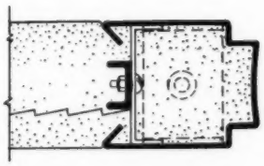
TREES, SHRUBS AND VINES, LOCATED AND SUPERVISED IN PLANTING AND CARE BY REPUTABLE LANDSCAPE ARCHITECT.

TREES AND SHRUBS SHOULD BE PLACED SO AS TO PROVIDE SHADE BUT NOT TO SHADOW WINDOWS.

ATTRACTIVE SCREENS PROVIDED BY HEDGES AND VINE-COVERED LATTICE.

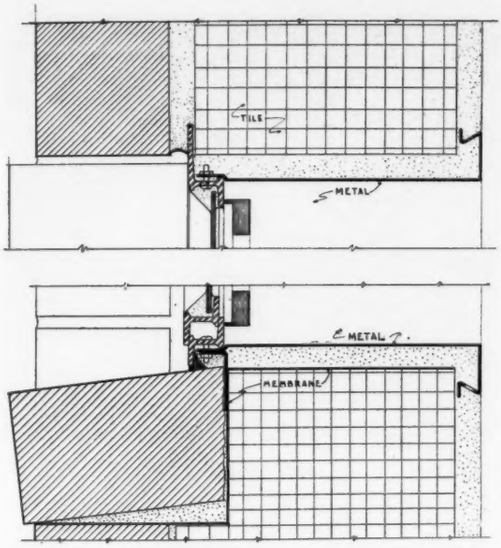
SCREEN GARAGES AND LAUNDRY YARDS.

The apartment house suggests community play areas and lawns whereas the row house or flat is generally treated with individual gardens. A considerable difference in initial cost and upkeep will result through such selection of living unit and should be looked upon as one of the deciding factors. From the social side it may be seen that a community atmosphere is created wherein the park space and playgrounds for children are brought within easy reach and made most accessible to every one. Proper site planning should take care of the correct layout of through streets and secondary streets so as to guard against traffic mishaps, vehicular noises and odors.



DOOR TRIM FOR DOUBLE-SWINGING DOOR IN 2" SOLID PARTITIONS.

* The National Board of Fire Underwriters' Handbook, p. 137.
* The National Board of Fire Underwriters' Handbook.



SECTION OF TYPICAL WINDOWS, TECHWOOD FEDERAL HOUSING PROJECT, ATLANTA, GEORGIA. NOTE STAMPED STEEL WINDOW TRIM, FREE FROM PROJECTIONS.

GARAGES

CONVENIENTLY LOCATED GARAGE ACCOMMODATION, INCLUDING ACCESS FROM STREET.

FIREPROOF CONSTRUCTION PREFERRED.

FIREPROOF WALLS TO SEPARATE COMPARTMENTS.

LOCATION INDEPENDENT OF APARTMENT.

DAYLIGHT AND ELECTRIC ILLUMINATION AT FRONT END OF CAR.

PROVISION FOR WATER.

STORAGE SHELF.

FLOOR OF CONCRETE DRAINED TO ENTRANCE.

PROVISION FOR HEATING IN COLD LOCATION.

LAUNDRY

For low-cost housing it is supposed that, generally, the kitchen will be converted to laundry use. This presupposes the installation of a combination sink and laundry tray. There should be ample drying space for each apartment.

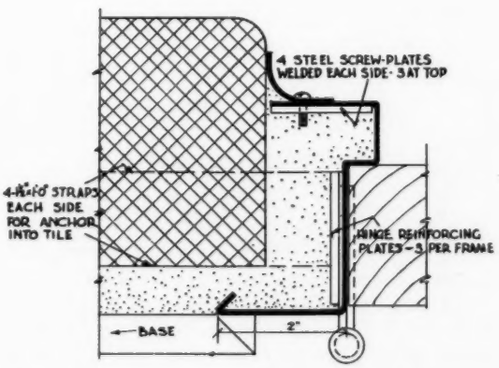
The separate laundry, where provided, should be airy, dry and well lighted. It should be comfortable, convenient and equipped with laundry trays, wringer rack, laundry stove (desirable), access to drying space, outlets for washing machine and iron.

NOISE AND ITS PREVENTION *a

"Acoustic defects in modern residential buildings are largely due to lack of solidity." The more homogeneous the materials, the more easily is sound transmitted, hence a steel frame structure with brick filling, etc., and having means of resisting vibration at the bearing of girders, is a desirable construction.

Sound insulating door panel. A sound insulating door comprises outer panels of wood and inner layers of sound absorbent materials such as felt, asbestos or spun glass wool.

Sound absorptive quilt; unit panels for kitchen ceiling; rigid insulation; separation of walls.


4 STEEL SCREW-PLATES WELDED EACH SIDE - 3 AT TOP
4-#16 STRAPS EACH SIDE FOR ANCHOR INTO TILE
HINGE REINFORCING PLATES - 3 PER FRAME
BASE
2"

DOOR TRIM SET IN GLAZED TILE PARTITION WALLS FOR HALLWAYS. TECHWOOD FEDERAL HOUSING PROJECT, ATLANTA, GEORGIA.

CONTROL OF VERMIN (Cockroaches, Bedbugs, Ants)

REDUCE WOODWORK TO MINIMUM.

Cement or steel baseboards in preference to wood; door frames of metal; pipes preferably carried clear of walls with openings where they pass through carefully caulked to prevent access.

OMIT PICTURE MOLDS.

Hot water piping should be located as near as possible to bathrooms, installed so as to prevent harboring of vermin; floors and ceiling should have smooth cement, washable surfaces; linoleum floors laid directly on concrete; avoid tongue and grooved boarding and loose textured insulation board. Old buildings can be fumigated with hydrocyanic acid gas.*b

*a Building Science Abstracts. H. Bagand.
*b Building Science Abstracts. H. Bagand.

SPACE REQUIREMENTS FOR CHILDREN'S PLAYGROUND*

DEFINITION: "An outdoor area which provides play opportunities for children, primarily betwen the ages of five and fifteen."

PROVIDE SAND BOXES AND BUILDING BLOCK PLATFORMS.
(9′ x 12′) within view of apartment windows.

PLAYGROUND SITUATED WITHIN EASY WALKING DISTANCE OF APARTMENT OR HOUSING DEVELOPMENT.
"An area of three and one-half, preferably four, acres, is needed in every neighborhood where the present or estimated future child population equals approximately six hundred children. If they are to have an opportunity to play baseball, five acres should be provided."
Two and one-half acres may be considered as satisfactory for the needs of 300 children.

EQUIPMENT AND SPACE REQUIREMENTS FOR PLAYGROUNDS:

FACILITY AND AREA

APPARATUS	Sq. Ft. Required	Child Capacity
Climbing tree	100	6
Slide	450	6
Horizontal bars (3)	500	12
Parazontal bars	600	12
Horizontal ladders (2)	750	16
Traveling rings (stationary)	625	6
Giant stride	1,225	6
Small junglegym	180	10
Low slide	170	6
Low swings (4)	600	4
High swings (6)	1,500	6
Balance beam	100	4
See-saws (3-4)	400	8
Junglegym (medium)	500	20
Total	7,700	122

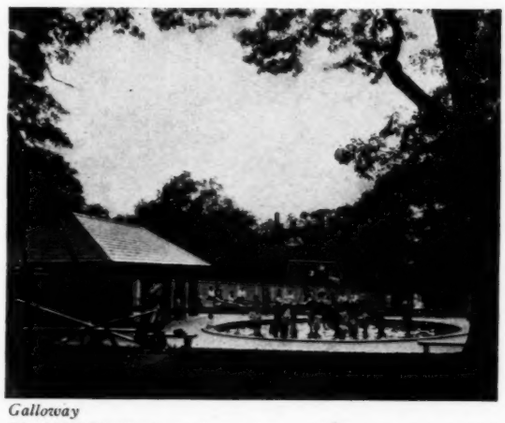
MISCELLANEOUS EQUIPMENT AND GAME SPACES	Sq. Ft. Required	Child Capacity
Open space for pre-school children	1,200	25
Open space for games of children 6-10	10,000	80
Wading pool	3,000	40
Handcraft and quiet game area	1,600	30
Outdoor theater	2,000	30
Building block platform	400	20
Sand boxes (2)	600	30
Shelter house	2,500	30
Total	21,300	285

SPECIAL AREAS FOR GAMES AND SPORTS	Sq. Ft. Required	Child Capacity
Soccer Field	36,000	22
Playground baseball (2)	38,125	40
Volley ball court	2,800	20
Basketball court	3,750	16
Jumping pits	1,200	12
Paddle tennis courts (2)	3,600	8
Handball courts (2)	2,100	8
Tether tennis courts (2)	800	4
Horseshoe courts (2)	1,200	8
Tennis courts (2)	13,200	8
Straightaway track	7,200	10
Total	109,975	156
Landscaping	6,000	
Additional space for paths, circulation, etc.	7,000	
Grand Total	151,975 (3.49 acres)	563

* Based on report of George D. Butler of the National Recreation Association.

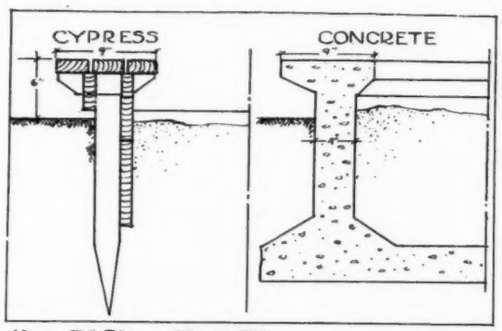
Galloway

CHILDREN'S PLAYGROUNDS FOR APARTMENT PROJECTS. PROVIDE 25 SQUARE FEET FOR EACH CHILD BETWEEN 5 AND 15 YEARS. IN GENERAL, PROVIDE ONE ACRE OF RECREATION AREA PER 300-500 PERSONS.



Galloway

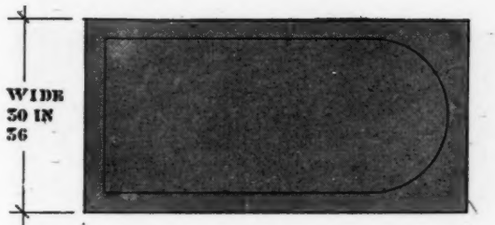
PLAYGROUNDS PLACED IN A SETTING OF TREES AND SHRUBBERY TO CONSERVE THE NEIGHBORHOOD VALUES.



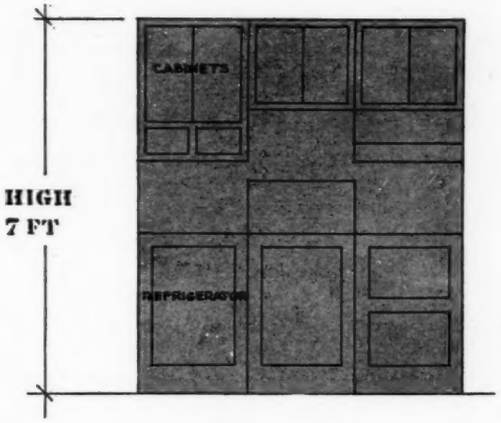
SAND BOX

CONSTRUCTION OF SAND BOXES WITH WOOD OR CONCRETE. PROVIDE DRAINAGE FOR TANK TYPE. SAND BOX SIZE, RECOMMENDED BY NATIONAL RECREATION ASSOCIATION, IS 9 FEET BY 12 FEET. BENCHES SHOULD BE PROVIDED NEAR SAND BOXES. WOOD BENCHES AND SAND BOX SURROUNDS SHOULD BE FREE FROM SPLINTERS, AND PAINTED.

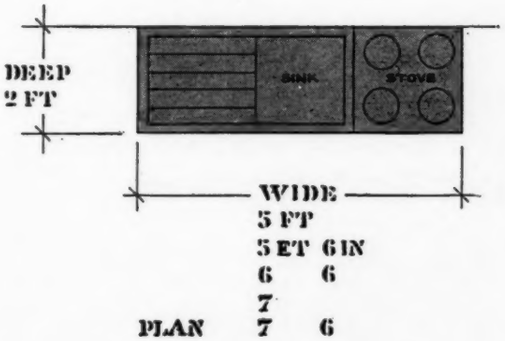
ELEVATIONS



PLANS



ELEVATION



PLAN

BASIC DIMENSIONS

WINDOWS (Double-hung, Wood)

Standard size: width, 1′-4″ to 3′-0″ every 2″ interval. Height, 3′-0″, 3′-6″, 4′-0″, 4′-6″, 5′-2″.

DOORS

Door sizes for houses recommended by the Housing Division of PWA are: Entrance door, 2′-8″ minimum, 2′-10″ desirable width; Bedroom door, 2′-6″; Bathroom door, 2′-0″, 2′-4″ desirable width; Closet door, 2′-4″ width; Linen closet door, 1′-8″—2′-0″; all doors 2′-6″ or more in width should be 1¾″ thick; door heights to be 6′-2″—6′-8″.

ROOMS

Minimum sizes recommended by PWA (Housing Division):
Apartment living room, 11′-0″ x 14′-0″.
House living room, 10′-6″ x 15′-0″.
Main bedroom, 10′-0″ x 11′-0″.
Second bedroom, 9′-3″ x 11′-0″.
Kitchen, 7′-4″ x 9′-6″.
Bathroom (standard), 4′-11″ x 6′-8″.
These sizes determined as smallest workable sizes for rooms of low cost. Where building costs permit, the dimensions listed should be increased.

PLUMBING FIXTURES

Kitchen sink (without drain board), 21″ to 24″ by 22″ to 30″ long. Height of rim, 32″ to 36″ above floor.

Kitchen sink (with single drain board), 21″ to 24″ by 41″ to 52″ long. Height of rim, 32″ to 36″ above floor.

Bathtub, 30″ to 36″ by 54″ to 72″ long, 18″ high. Finish tile or plaster surface will reduce bathroom width by one inch.

Lavatory (wall type), 18″ to 30″ by 15″ to 24″ wide. Height of rim, 31″ above floor surface.

Lavatory (freestanding, 2″ off wall), 24″ to 36″ by 20″ to 24″ wide. Height of rim, 31″ above floor.

Toilet, width over-all, 22″ to 24″. Projection from wall, 24″ to 30″.

Shower cabinet, 32″ x 32″ to 42″ x 42″, 72″ to 78″ high.

Laundry tray (single), 20″ to 26″ by 22″ to 30″ long. Height of rim, 31″ to 36″ above floor.

Laundry trays (double), 22″ to 27″ by 40″ to 50″ long. Height of rim, 31″ to 36″ above floor.

KITCHEN EQUIPMENT

Range (oven above), 21″ to 27″ by 21″ to 30″ long, 34″ to 38″ high.

Range (oven at side), 23″ to 27″ by 40″ to 48″ long, 40″ to 54″ height over-all.

Refrigerator, 18″ to 27″ by 24″ to 32″ long, 48″ to 60″ high.

FURNITURE

Table, 34″ to 40″ wide, 4′-0″ long for 4 to 6 persons, 6′ long for 6 to 8 persons, 29″ high.

Dining table, 3′-0″ diameter will accommodate 4 persons; 4′-0″ diameter, 6 persons; 28″ to 29″ high.

Chairs, 17″ deep by 16″ wide. Height, 32″ to 42″ over-all. Seat, 18″ above floor.

Easy chair, 30″ by 30″. Height, 32″-36″. Seat height, 16″-18″.

Davenport, length, 6′ to 7′; depth, 30″ to 36″; height over-all, 30″.

Upright piano, 4′-10″ to 5′-4½″ long, 2′-0″ to 2′-2″ wide.

Grand piano, 4′-10″ to 5′-0″ wide, 5′-10″ to 7′-3″ long; height, 3′-4″.

Baby grand, 4′-7″ to 4′-10″ wide, 4′-11″ to 5′-8″ long; height, 3′-3″ or 3′-2″.

Single bed, 3′-0″ to 3′-3″ wide, 6′ to 6′-6″ long.

Double bed, 4′-0″ to 4′-6″ wide, 6′-0″ to 6′-6″ long.

STANDARDS FOR LOW-RENT HOUSING

PLANNING REQUIREMENTS SET UP BY PWA HOUSING DIVISION

Extensive research into the field of low-rent housing has brought to light certain definite conclusions regarding basic principles to be followed in the successful development of housing projects of this type. For the past eighteen months the Housing Division of the Public Works Administration has been compiling data as well as creating and developing new basic ideas on this subject.

Within a surprisingly short time low-rent housing has become a reality and, in the absence of organized data, the Government has found it necessary to provide information. The Housing Division has had access to the records of all projects both here and abroad, and while the material assembled at this time represents only a starting point, it is felt that through the use of it the architects and others interested will have definite suggestions with which to approach the problem.

In view of the rapid strides being made, all plans and accompanying data are to be considered only as transitional. Standardization is not implied. It is dangerous to attempt to determine plan solutions in low-rent housing, for what may now appear to be satisfactory may soon be proved unwise. The present solutions of housing problems must be looked upon as progressive steps in our education in this field.

FACTORS THAT INFLUENCE DESIGN

There are many factors, such as climate, location, and economic, social and political conditions, that may affect the ultimate solution of a housing project, but there are certain features, on the other hand, that will remain constant. First, and most important of these, is the housing unit, which is the largest single grouping of rooms that may be dealt with.

HOUSING UNITS

A housing unit may be defined as being a compact and efficient room group served by one stair and consisting of as many rooms or dwelling units as may be intelligently worked around this stair. The unit plan is generally one floor in height but may be repeated one above the other, as in the case of the apartment house. Row houses and flats are treated similarly in that unit plans form the basic element of design.

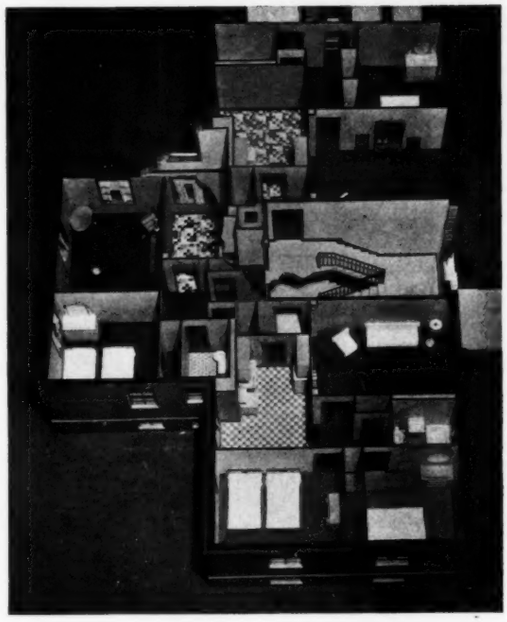
It has been found that the unit plan is a specific problem whereas the site plan, heights of buildings, and the proper selection of dwelling units, all require detailed study to satisfy the individual demands required by varying local conditions. The effort of the Housing Division has been to find the best available unit plan solutions in each group, leaving the final choice to the architect and others familiar with specific local problems.

To make a housing project successful, the dwelling units must be tenanted by those who are not only attracted by the original appeal but who find them so livable that they continue to be happy as occupants. This not only makes "satisfied customers" but reduces the tenant turnover to a necessary minimum. At the same time every known rule of basic economy must be exercised.

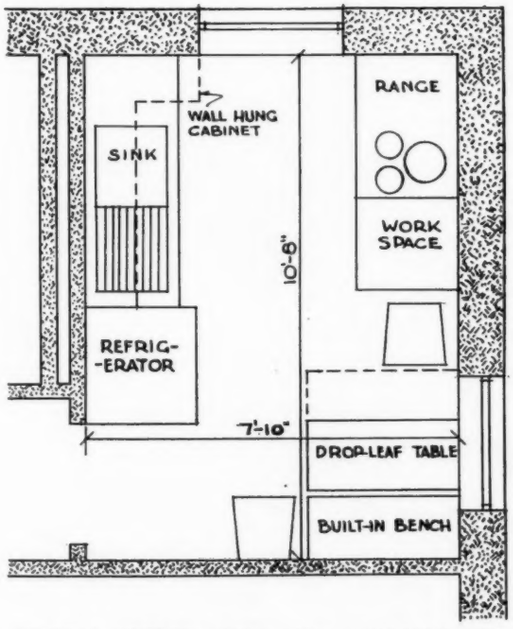
With this in mind a schedule of architectural standards was adopted by the Housing Division embodying the following features applicable to low-rent housing:

1. KITCHEN DATA:

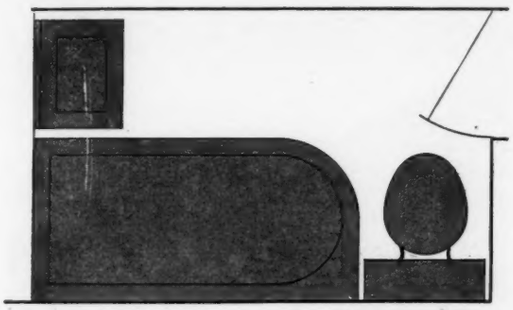
(a) Cross currents of air desirable although not readily had.
(b) Advisable to install ready-made cabinets.
(c) Study arrangement to avoid lost motion, unnecessary stretching or stooping, and allow for easy opening and tight closing of doors, windows, and drawers.
(d) Preferable to have kitchen located near entrance.
(e) Locate good artificial lighting so as to reach all corners at night.
(f) Eating in kitchen must be considered and space allowed for this in planning.



ONE OF THE TESTS APPLIED BY THE FEDERAL HOUSING DIVISION TO ITS ARCHITECTURAL PLANS FOR A PROJECT. THIS MODEL WAS BUILT TO ONE-HALF INCH SCALE FOLLOWING THE UNIT PLANS DISCUSSED IN THIS ISSUE OF THE ARCHITECTURAL RECORD.



TYPICAL KITCHEN FROM PWA (HOUSING DIVISION) "SAMPLE PLANS." THERE IS DESIRABLE CROSS CIRCULATION OF AIR; DINING TABLE, WITH DROP LEAF AT WINDOW.



BATHROOM OF NARROW ARRANGEMENT WITH ACCESS FROM HALL; 31½ SQUARE FEET. BATHROOM SIZE 4'-11" x 6'-8" (33.2 SQUARE FEET) SUITED TO "SAMPLE PLANS" ILLUSTRATED IN THIS ISSUE.

2. **BATHROOM DATA:**
   (a) Layout to be standardized throughout project.
   (b) Preferable to locate bathrooms adjoining kitchen so as to use one set of plumbing stacks.
   (c) Walls of hard white cement.
   (d) Floors and base of tile.
   (e) One medicine cabinet in each bathroom.

3. **PORCHES AND BALCONIES:**
   (a) Mainly a matter of study applied to the project locality.
   (b) Care should be exercised in the placing of porches so as not to reduce unduly the amount of natural lighting in rooms off porches.

4. **VESTIBULES:**
   (a) Desirable on ground floor leading into stair hall.
   (b) No announcer bells required except for apartments with separate entrance stairways.
   (c) Mail boxes to be installed in vestibules; architects should consult with Post Office Department for arrangement of mail boxes and secure official approval of the site plan for mail deliveries and house numbers.

5. **STAIRS AND STAIR HALLS:**
   (a) Walls of apartment houses to be built of hard, washable, glazed tile, except for special conditions.
   (b) Incinerators, rather than dumb-waiters, in all apartment house structures over two stories in height.
   (c) Steep stairs to be avoided.
   (d) Stair landings to be broad and triangular turns or winders to be avoided.
   (e) Handrails on both sides to be provided throughout.
   (f) All stairways to be adequately lighted.

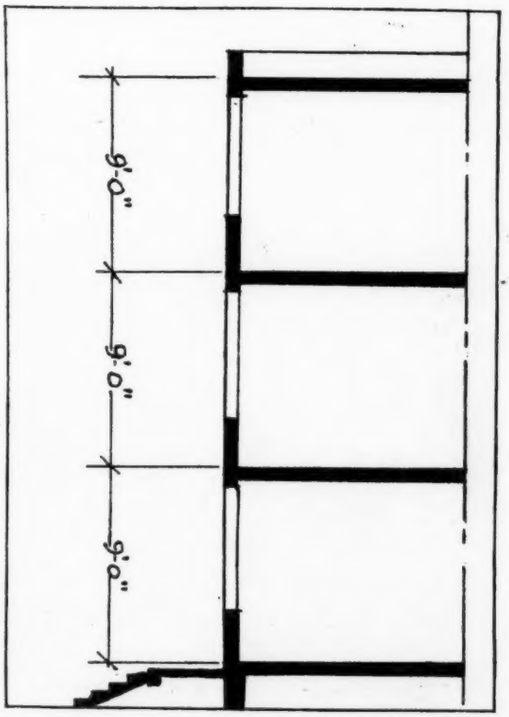
6. **STORAGE SPACE:**
   (a) In apartment houses, storage space to be provided for each unit—one method of putting basements to good use.
   (b) In row houses and flats, storage space may be either in basement (group or individual) or in superstructure utility room.

7. **CLOSETS:**
   (a) Standard formula to determine number of closets: for each dwelling unit one coat closet (preferably in entry or vestibule), one linen closet, and at least one for each bedroom.
   (b) Minimum depth 1'10".
   (c) Use of doors on closets depends on individual project.
   (d) Closets to be kept away from exterior walls in all cases—this is done to conserve light area.
   (e) No cutting into rooms with closets.

8. **WINDOW AREA:**
   (a) At least one-tenth of floor area.
   (b) Minimum bathroom windows 1'8" x 3'0".
   (c) Windows to run up close to ceiling so that light penetrates deeply into rooms.

9. **STORY HEIGHTS:**
   (a) Except as required otherwise by local ordinances, story heights to be 9'0" from finished floor to finished floor.
   (b) No room to have less than 8'6" from finished floor to finished under side of ceiling slab, except basements which may be 8'0".

10. **MISCELLANEOUS:**
    (a) At least one chamber in each dwelling unit to be designed for twin beds.
    (b) Essential to eliminate whole beams in ceilings of all important rooms.
    (c) No compulsory passing through living rooms except in special cases.



NINE FEET FLOOR TO FLOOR STORY HEIGHT RECOMMENDED, EXCEPT AS REQUIRED OTHERWISE BY LOCAL ORDINANCE. BASEMENTS—EIGHT FEET FROM FLOOR TO CEILING.

ECONOMY IN PLAN LAYOUT

In addition to the above, due consideration should be given to the fact that an economy in plan layout must be accomplished without the loss of any desirable features, and at the same time allowing for a certain amount of flexibility. **After a minimum schedule of room sizes has been adopted, it will be found that in most cases the efficiency of a unit will be better satisfied through a proper sequence and arrangement of rooms rather than by simply increasing the room dimensions.** A well designed kitchen or bathroom with properly arranged fixtures and equipment is more useful than a larger room in which little or no thought has been given to room layout. As applied to living rooms and bedrooms, in addition to excess original construction cost, too much furniture would be needed by the tenant in projects where rooms are made excessively large.

Other factors, such as the proper use and layout of basement (if one is to be built), the most efficient type of construction to be used and many others are so much a local problem that they should be handled individually, and therefore no attempt has been made to adopt standards for them.

It should be noted that the minimum desirable sizes shown in the sample plans might be increased efficiently and would thereby add to the desirability of the plan from the renting standpoint, since, in practically every case, these plans were conceived to cover **minimum** requirements only. However, it should be observed that no plans can possibly be decreased without seriously affecting rentability. On the contrary, great improvements may be obtained by increasing either or both dimensions by one or two feet. This should result in fewer vacancies as the initial construction cost is but slightly increased, with a correspondingly small difference in maintenance costs existing between the minimum size plan and one that has been increased by about ten per cent.

Outstanding among the underlying principles which resulted in the code of minimum standards being adopted by the Housing Division and as outlined above, are the following:

Galloway

CHATHAM VILLAGE, PITTSBURGH, PA. INGHAM AND BOYD, ARCHITECTS; CLARENCE S. STEIN AND HENRY WRIGHT, CONSULTANTS.

MINIMUM ROOM SIZES:

It will be noted that a minimum dimension as well as a minimum area was standardized for different types of rooms. This was done in order to make every room livable and to avoid odd-shaped rooms. Each kind of room was studied for the amount of furniture as well as for the equipment that will go into it, and walking space around all of these was carefully considered. A radical point of departure to be observed is that all bedrooms were admittedly made wide enough for occupancy by two persons. Also note the standard dimensions adopted for bathrooms which, it has been found, comfortably (but not wastefully) allow sufficient space for all fixtures.

KITCHEN DATA:

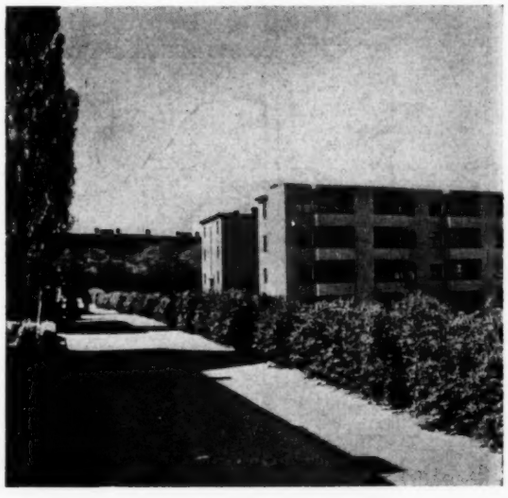
Much study has been put into this particular matter as it is considered by many to be the focal point of all dwelling unit activities. Since the dining room was ruled out of use as far as Government housing is concerned, the kitchen must now provide space for eating purposes as well as for the usual cooking and storage duties. As will be noted from the items mentioned, the research expended in this part of the building structure is giving evidence of having the kitchen resolve itself into a work laboratory for the home.

CLOSETS:

These have been standardized both in number per dwelling unit and in size. It has been observed that only too often in the past, wherever a spare corner would be found, the architect would naturally turn it into a closet. Inversely, if no such places were found then the necessary closet space would be cut out of the room. These are all considered to be bad practices; therefore the standardization.

DWELLING UNITS:

This term may be defined as any room, or group of rooms, designed as the living quarters of one family or household, and equipped with cooking and toilet facilities, and having an independent entrance to a public hall, or one directly to the outside; sometimes referred to as suite or apartment. The Housing Division is, at present, advocating three types of dwelling units, namely those in apartment houses, row houses, and flats. The underlying principles that help to determine the prevailing type for any one project, are, as described above, selected by the local architect as a result of local conditions. No one type may be said to be better than any other because each has its place. Apartments lean towards use on more expensive ground and in localities where occupants expect this kind of living along with complete services. Row houses are characteristic of sections in which tenants seek the individuality of private occupancy with garden space. Flat houses lend themselves more to less expensive land where the occupants do not demand the services expected of the apartment house type of resident· resultant savings are of course to be had.

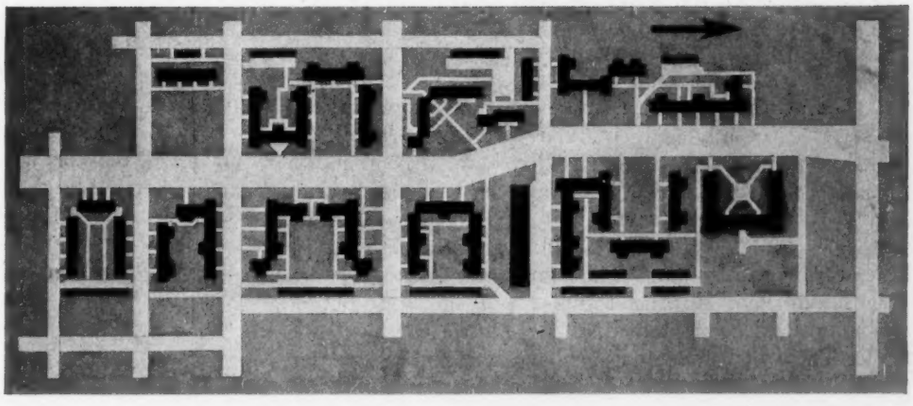


APARTMENT HOUSES WITH AMPLE SPACE FOR LANDSCAPE PLANTING.

STANDARDS FOR RESIDENTIAL CONSTRUCTION —CONTROL THROUGH MORTGAGE INSURANCE

This news digest covers developments connected with the Federal Government's long-term program for reviving and stabilizing residential construction—developments that have taken place since the National Housing Act was passed last June. The program aims to improve building standards for the common types of residence in which the bulk of the urban population is housed and to make mortgage money available on terms devised to eliminate the speculative waste heretofore customary in finance, real estate development and construction.

The news under review indicates that private residential construction will be ready to go ahead presently this year to the extent justified by supply and demand and raises the hope that architectural services will be more in request hereafter than they have been in an unregulated speculative real estate and building market. The digest is in three parts, the first dealing with Federal low-rent housing construction, the second with private residential construction, and the third with mortgage insurance standards.



TECHWOOD at Atlanta, Georgia —the first all-Federal project in the Public Works Administration's slum-clearance and low-rent housing program to reach the actual construction stage. This new housing consists of 3-story dormitory and 2- and 3-story apartments. It will provide 603 dwelling units and dormitory quarters for Georgia Institute of Technology. Allotment: $2,700,000. Land cost: 49 cents a square foot. Architects: Burge and Stevens.

Part 1: FEDERAL HOUSING CONSTRUCTION

PLAN REQUIREMENTS FOR LOW-RENT HOUSING

In preparation for the Government's enlarged program of low-rent housing construction, the Housing Division of the Public Works Administration has made a series of plan studies showing arrangement of rooms in an apartment and of apartments on a floor. The series occupies some forty 18 by 24-inch blueprint sheets. It is accompanied by a text of about 10,000 words, setting forth the requirements and recommendations accepted as governing factors in the plan studies. The Division takes the position that, as the Government money invested in housing projects will be amortized over a long period, the plans as well as other features must embody advanced practice in order to prevent early obsolescence.

The text and the plans, to be published under the title "Sample Plans," constitute a book of reference on a subject that is still new to most American architects—the planning of low-rent housing. The types of housing employed in Housing Division projects—apartment houses of three or four stories, flat houses of two stories and row houses of one or two stories—are in common use in suburbs and small cities. To promote the building of these types as well as free-standing dwellings is one of the principal objectives of the Home Loan Bank Act and the insurance title of the Housing Act. Those members of the Home Loan Bank system that operate under Federal charters are—and those operating under State charters expect shortly to be—permitted to offer 80 per cent building loans on houses for one to four families not exceeding with the land $20,000 in value, this high loan coverage being safely coupled with a low interest rate bacause the mortgages securing the loan are (1) amortized, (2) discountable and (3) eligible for insurance by the Federal Mutual Mortgage Insurance Corporation, which is authorized by law to determine standards of eligibility.

As insurable mortgages seem likely to play a leading rôle in the future construction of typical moderate-cost houses for one to four families, and as the Housing Division follows standards acceptable to the Mutual Mortgage Insurance Corporation, the architect in private practice will have reason to study the Housing Division requirements and recommendations.

CONSTRUCTION STANDARDS AND COST

The forthcoming publication "Sample Plans," being devoted to a particular subject, deals with related subjects only to the extent that they contribute assumptions necessary to the house plan. The principal assumption with respect to construction is that it must be "sound, lasting and economical." However, we have oral authority for the statement that the Housing Division projects contemplated in this plan study are to be of fireproof construction. The standards therefore may be summed up in the terms soundness, durability, economy and fireproofness.

In Techwood these qualities have been realized by the use of exterior walls of poured concrete or tile faced with brick, reinforced concrete floors, metal casement windows and metal trim, together with metal kitchen cabinets and shelving, incinerators, and other equipment normally associated with high-grade construction.

Economy being so important in low-rent housing, the following letter from Richard W. Onslow, Assistant to the Director of Press Relations, Federal Emergency Administration of Public Works is of interest:

> "The average cost per cubic foot as estimated by the Division is running at the present time around 30c. To this must be added the cubic cost for mechanical equipment, which at the present time is running around 9c per cubic foot. This gives an average total cost of 39c for the buildings.
>
> "These figures do not include landscaping nor land cost, but represent our estimates on the buildings themselves. These estimates cover the Techwood and University, Indianapolis, Cincinnati and Cleveland projects. They should not be construed as anything more than estimates.
>
> "I might say, however, that the contract price for the Techwood project fell well within our estimates." All projects mentioned are of fireproof construction.

LOW-RENT HOUSING DEFINED

The following definitions are taken from a copy of the manuscript for "Sample Plans":

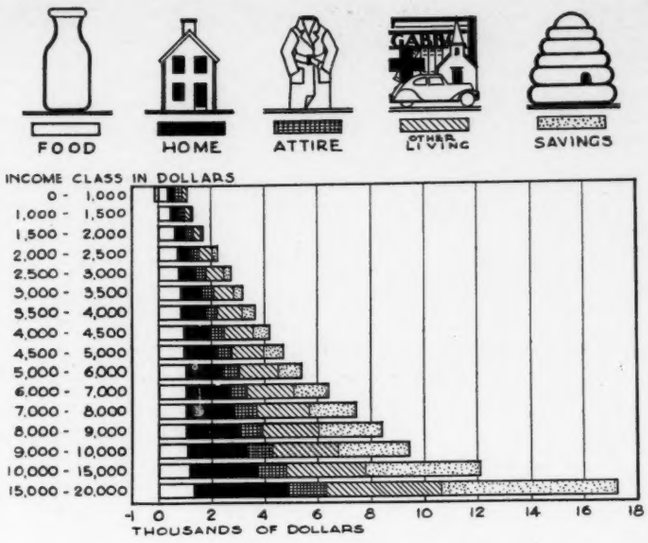
1. Low-rent housing provides shelter embodying modern standards of construction, light, ventilation, privacy and sanitation at rentals not to exceed one-fourth of the average family income for wage-earners in the lower brackets of the income group.

2. An alternative definition is that the maximum monthly room rental charged shall not be greater than the median monthly rental per dwelling unit now paid, divided by the number of persons in the median size family in that particular community.*

To apply these definitions to a given project involves a study of the community for which the project is intended. However, being both a standard of measure and a declaration of policy, they are sure to be used in connection with a variety of general studies; for example, estimating the amount of housing economically practicable at a given rent.

Information on such topics as tenure of home, value or monthly rental of nonfarm homes, size of family, families classified according to number of children under 10 years old, number of children under 21 years old, number of gainful workers, number of lodgers, age of head, employment status of home-maker, dwellings classified according to number of families accommodated, families having radio sets, and families classified by color and nativity of head is given for the United States, for each State, for counties, for the smaller cities and other urban places, and for wards or other subdivisions of the larger cities in Volume VI, entitled "Families," of the Fifteenth (1930) Census Reports on Population.

*For a discussion of this definition see, "A Method for Determining What Constitutes Low-Cost Housing," by Norbert Brown, REAL ESTATE RECORD AND BUILDERS' GUIDE, September 16, 1933, pp. 3-4.



ESTIMATED NUMBER OF FAMILIES BY INCOME CLASSES, 1929 (in thousands)

Income Class[a] (In dollars)	Families of Two or More Persons		
	Total	Non-Farm	Farm
Under 0[b]	120	50	70
0 to 500[b]	1,982	600	1,382
500 to 1,000	3,797	2,085	1,712
1,000 to 1,500	5,754	4,749	1,005
1,500 to 2,000	4,701	4,094	607
2,000 to 2,500	3,204	2,811	393
2,500 to 3,000	1,988	1,767	221
3,000 to 3,500	1,447	1,312	135
3,500 to 4,000	993	898	95
4,000 to 4,500	718	656	62
4,500 to 5,000	514	474	40
5,000 to 6,000	666	626	40
6,000 to 7,000	407	388	19
7,000 to 8,000	252	243	9
8,000 to 9,000	172	168	4
9,000 to 10,000	128	126	2
10,000 to 15,000	304	301	3
15,000 to 20,000	108	107	1
20,000 to 25,000	59	59	[c]
25,000 to 30,000	35	35	[c]
30,000 to 40,000	40	40	[c]
40,000 to 50,000	22	22	[c]
50,000 to 75,000	27	27	[c]
75,000 to 100,000	12	12	..
100,000 to 250,000	16	16	..
250,000 to 500,000	4	4	..
500,000 and over	4	4	..
All Classes	**27,474**	**21,674**	**5,800**

[a]Includes income from occupation, investments, and sale of property; also includes imputed income on owned homes, but does not include imputed income on durable consumption goods other than homes. The distribution above $15,000 is very rough.
[b]The estimates for this class are highly tentative.
[c]Less than 500 included in $15,000 to $20,000 class.

Until recently the most useful survey of information on family incomes and budgets was perhaps the one contained in the Publications of the President's Conference (1931) on Home Building and Home Ownership.

This survey is now superseded by the original research study "America's Capacity to Consume," by Maurice Leven, Harold G. Moulton and Clark Warburton (The Brookings Institution, Washington, D. C., 1934), a book of first-rate importance to housing students. The accompanying partial reproduction of a table on page 227 is printed with permission from the publishers.

RENTS IN A LOW-RENT PROJECT

Ground has been broken in Atlanta, Georgia, for the first all-Federal project in the Public Works Administration's slum-clearance and low-rent housing program to reach the actual construction stage. The project is the Techwood development, for which the land has been acquired at 49 cents a square foot, and a $2,108,337 contract awarded.

Federal projects to clear slums and provide modern housing for families in the lower income groups are progressing in some 30 cities. Title to sites in four cities has been vested in the United States, and additional sites are being acquired.

The Techwood development will be of modified Georgian design and of fireproof construction. It adjoins the campus of Georgia Institute of Technology and will provide, in addition to 603 family units in apartments and row houses, 159 dormitory rooms for the students of the Institute.

Twenty-three units make up the project; seven courts of row houses, thirteen three-story apartment buildings, the dormitory, a playground shelter, and an administration building with offices, stores, and equipment for a clinic. There will be 397 living units of three rooms, 128 of four, 53 of five, and 26 of six-rooms. For the use of tenants, the project includes 186 garages.

Thirteen blocks of substandard dwellings were cleared for the housing development. Only 20 per cent of the reclaimed area will be used for buildings; the remainder will be landscaped and devoted to park and recreational purposes.

The rent schedule has not yet been worked out. Nor has the Management Branch set any minimum and maximum family incomes as criteria for tenants. Preliminary official estimates indicate that rents may average $7.41 a room a month, a figure that may be changed, possibly downward, when the project is finished.

It does not seem unreasonable therefore to assume that the rents when finally established will run from $7.50 to $8 a room a month. A three-room apartment will on this assumption call for a yearly rent of $270 to $288 and a five-room apartment for $450 to $480. If the assumption turns out to be correct, these admirably planned, constructed and equipped low-rent houses are adapted to family incomes ranging from $1,080 to $1,920 a year.

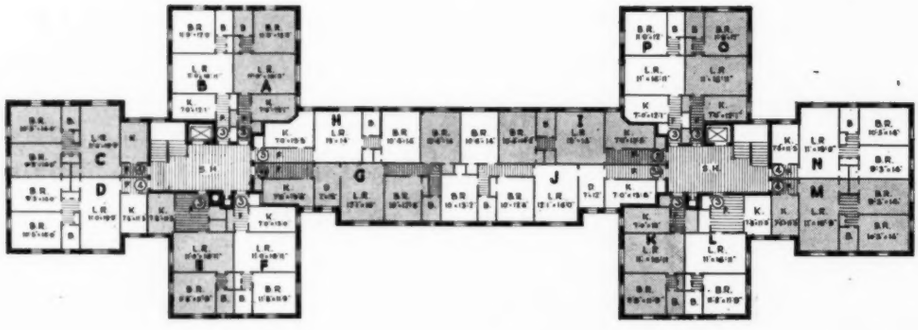
It is, of course, understood that 30 per cent of the expenditure for labor and materials is a subsidy, and that the rents are to liquidate the total cost of the project, after deducting the subsidy. The land was originally acquired by a limited dividend corporation, which transferred the title to the government.

McLaughlin Aerial Surveys

The Boulevard Gardens Housing Corporation, a limited dividend corporation formed under the New York State Housing Law, has secured a loan of $3,450,000 from the Federal Emergency Administration of Public Works, in Washington, to build ten 6-story apartment houses, providing housing for 960 families at an average rental of $11 a room. The interest rate of the loan is 4% and, by amortizing at the rate of 2.4% annually, the mortgage will be fully repaid in approximately 26 years. The project is not tax-exempt. Each unit will contain 332 rooms divided into 96 apartments. In each unit there are two 2-room apartments, sixty 3-room apartments, twenty-two 4-room apartments, six 4½-room apartments, and six 5½-room apartments, the half room in the latter sizes being a separate dining alcove. Two self-service elevators, incinerators, modern gas ranges, mechanical refrigeration and radio outlets will be standard equipment in each building.

BOULEVARD GARDENS, INC.
HOUSING DEVELOPMENT
AT WOODSIDE, NEW YORK

T. H. ENGELHARDT, ARCHITECT
ADOLPH M. DICK, CONSULTANT



Wood Aerial Surveys, Inc.

Allotment: $1,039,000. Estimated total cost: $1,153,607. To provide approximately 284 living units (1,085 rooms).

JUNIATA PARK (LIMITED DIVIDEND) HOUSING CORPORATION PROJECT IN PHILADELPHIA
W. POPE BARNEY, ARCHITECT . . . . . KASTNER AND AND STONOROV, ASSOCIATES

RECAPITULATION OF PWA HOUSING PROJECTS:

Eight Limited Dividend Projects	$ 12,669,600	3,452 Living Units
Thirty-two Approved Federal Projects	$115,778,000	24,500 Living Units (approx.)

In addition, fifteen Federal projects are ready for submission for approval, contingent upon availability of funds. These involve $41,295,000.

Total acreage to be acquired for thirty-two approved projects: approximately 719.5 acres. Average size of project site: 22.5 acres. Coverage: 25 - 30 per cent.

Part 2: PRIVATE RESIDENTIAL CONSTRUCTION

THE SECURITY OF DECENT HOMES

Among the measures that further this objective of the President are (1) the Federal Home Loan Bank System, (2) the Home Owners' Loan Corporation, (3) the Federal Mutual Mortgage Insurance Corporation, (4) the Housing Division, (5) insurance of modernization loans, to mention only those which bear directly on urban housing.

Bills before the Congress to reshape and strengthen the group of organizations already in existence will not be reviewed at this time. However, the provision in the banking bill which would permit member banks of the Federal Reserve System to lend more freely on real estate mortgages warrants special mention. The provision is explained by Marriner S. Eccles, governor of the Federal Reserve Board, in his statement on the bill as follows:

> "The changes proposed would authorize banks to use a larger proportion of their assets for mortgage loans than is permitted by existing law, to lend up to 75 per cent of the property value and for a term up to twenty years on properly amortized first mortgages, and to make such loans without regard to the local geographical limits to which the existing law confines them.
>
> "Member banks of the Federal Reserve System hold nearly $10,000,000,000 of time deposits that represent in large part the people's savings. These are long-time funds. Their use for long-time purposes is proper from every point of view."

The proposed changes are intended to clarify the amendment of the Federal Reserve Act contained in the National Housing Act of June 27, 1934, which permits member banks to lend in excess of 50 per cent of the value of the real estate and for a longer term than five years upon mortgages insured under the provisions of Title II of the National Housing Act. The implifications of this amendment are that member banks of the Federal Reserve System may lend up to 80 per cent on amortized mortgages for periods not to exceed 20 years, and some of the biggest banks of the country have applied to the Mutual Mortgage Insurance Corporation for approval as mortgagees. The banking bill before the Congress limits the coverage to 75 per cent, instead of 80 per cent, but otherwise explicitly enables the thrift departments of member banks to hold the same kind of amortized insured mortgage as that which members of the Home Loan Bank System may hold.

The time deposits of member banks of the Federal Reserve System contain only a part of the thrift accounts of the country. The larger part is held by institutions of the kind eligible for membership in the Home Loan Bank system—building and loan associations, mutual savings banks, life insurance companies and the like. Such institutions, with the exception of Federal savings and loan associations, operate under State charters and are subject to State laws which permit them to lend not more than 50 or 60 per cent of the value of the real estate.

These laws were enacted when short-term mortgages were common and it was customary for a thrift institution to hold a first mortgage while second and often third mortgages were taken by concerns financing sales by operative builders. That part of the mortgage business upon which activity in new construction depended —through building loans, junior mortgages, bond issues —was bankrupted by the depression. To replace it, so far as moderate-cost housing is concerned, the long-term amortized mortgage covering up to 80 per cent of real estate values has been standardized by the Home Loan Bank Act and related Federal legislation and is insured by the Federal Mutual Mortgage Insurance Corporation.

To enable State chartered thrift institutions to invest in mortgages insured by the Corporation authority has to be given by 46 State legislatures, two having already passed the required legislation. Four do not meet this year. The governors of thirty-eight of the remaining States had up to January 21 responded favorably to the suggestion from President Roosevelt that they recommend enabling legislation.

There cannot be much doubt but that by the time the Congress and the majority of the State legislatures now in session adjourn the one remaining major item in the Government's program for reorganizing the residential mortgage market will have been put into effect.

The former sources of building loan money are dried up. As there is no adequate volume of building loan money in sight except that which the legislative measures now under consideration promise to liberate, and as the security specified by those measures is the amortized insurable mortgage on houses for one to four families, it is safe to say that the bulk of private residential construction will hereafter be financed by means of this new form of lien.

This fact is of outstanding importance to the practice of architecture, because the regulations determining eligibility of mortgages for discount in the Home Loan Bank system and for insurance by the Federal Mutual Mortgage Insurance Corporation constitute in effect a Federal building code for the private as well as public construction of the types of home in which the great majority of the urban population is housed. The regulations are intended to carry out some of the implications contained in the phrase "security of decent homes." They promote stabilization of real estate values, encourage wholesome social and economic environments, and further sound planning and construction by setting up minimum requirements with regard to the community plan, the site plan, the house, the financial responsibility of the builder and so on, and the minimum requirements are enforced by prescribed means, including inspections and appraisals.

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It is the purpose of the following paragraphs to indicate the contents of the more important official releases in which these regulations may be found. The text of the releases is used freely without being set off by quotation marks.

Part 3: MORTGAGE INSURANCE STANDARDS

OPERATIVE (SPECULATIVE) BUILDING

Circular No. 4. Operative Builders. Information concerning insurance of mortgages on projects of operative builders under Title II of the National Housing Act (except operations under section 207). Federal Housing Administration, Washington, D. C., December 15, 1934.

Section 207 relates to mortgages on low-cost housing projects. When the National Housing Act was signed June 27, 1934, it was not clear how speculative building, which had for years produced the bulk of residential construction, would fare in the reorganized residential mortgage market. The answer depended upon the policy of the Mutual Mortgage Insurance Corporation —a policy which the Act authorized the Administrator to develop. Circular No. 4 sets forth the new status of the speculative or operative builder.

The Administration recognizes the operative builder as an important producer of residential mortgage security. Production of residential properties without proper relation to the economic need results in unsound and unstable property values, and is therefore not to be encouraged.

The Administration also recognizes the operative builder as an influential element in the creation of housing standards and conditions—both present and future. It is largely through the medium of his activities that desired improvement is transformed into reality. There exists, therefore, a natural union between the operative builder and the Administration in bringing about improvement in housing standards and conditions.

This circular is confined to the activities of the operative builder as a producer of one- to four-family dwellings. He is eligible to apply for the benefits of mutual mortgage insurance upon the same general basis as the individual home builder, and the factors which the Administration will consider in passing upon his application are in substance the same.

The number of insured mortgage loans which the operative builder may obtain is limited only by the conditions of demand and quality as may be determined by the Insuring Office. No mortgage, however, may (1) exceed $16,000 in principal amount, (2) exceed 80 per cent of the appraised value of the property, or (3) have a maturity to exceed 20 years.

Such mortgages may be placed upon (1) detached, (2) semi-detached or (3) row type one- to four-family dwellings subject to the following limitations:

1. Each dwelling must be located on a separate plot of land.

2. Each dwelling must be capable of being separately owned.

3. Each dwelling must be financed as a separate unit.

Although the Administration is not empowered to insure a mortgage until there is located upon the property which constitutes the security a one- to four-family dwelling, it is empowered to make commitments for the insuring of mortgages prior to the date of their execution and disbursement thereon.

Commitments of three types will be made upon the application of an approved mortgagee, for the insuring of a mortgage covering an operative builder's project:

1. Commitment will be made to an approved mortgagee where the operative builder has a definite buyer for the completed dwelling property. In such case the application for the insured mortgage loan shall be made by the buyer, as original mortgagor.

2. Commitment will be made to an approved mortgagee where the operative builder contemplates that an unknown buyer will be the original mortgagor. This commitment will be made subject to the subsequent submission and approval of a mortgagor's application for an insured mortgage loan.

3. Commitment will be made to an approved mortgagee where the operative builder is to be the original mortgagor, upon the Administration being satisfied as to the following:

(a) That he is able, with his own capital, to finance any portion of the cost of the project not financed through the medium of the mortgage loan.

(b) That he is able to carry the mortgage responsibility on a reasonable number of vacant or unsold projects.

(c) That the project is economically sound and conforms to all other applicable rules and regulations of the Administration.

In such cases, the application for the insured mortgage loan shall be made by the operative builder as original mortgagor.

ARCHITECTURAL STANDARDS FOR PRIVATE CONSTRUCTION

Circular No. 2. Property Standards. Requirements for mortgage insurance under Title II of the National Housing Act. Federal Housing Administration, Washington, D. C., November 27, 1934.

This circular is of special interest to architects. It begins with a statement of objectives. The Federal Housing Administration, as the custodian of funds accumulated from insurance premiums, must eliminate, so far as possible, the risks to which these funds may be subjected. The mortgage-insurance facilities of the Federal Housing Administration may be made available, therefore, only to those properties whose prospects of continued utility are sufficiently good to give assurance of their enduring as sound investments throughout the life of the mortgage.

In addition, the National Housing Act definitely places upon the Federal Housing Administration the obligation to encourage improvement in housing standards and conditions.

The Federal Housing Administration intends that

mortgages insured under its program shall be upon dwellings which are substantial and durable in structure, convenient and efficient in arrangement, attractive in appearance, and appropriate in their neighborhood setting. It intends that these dwellings shall be placed only in neighborhoods which possess, in considerable degree, security from those disintegrating influences which are more certain to destroy property values than defects in the building themselves.

The same standards will be applied to existing buildings, both as to structure and neighborhood, as to new buildings. To insure the continued financing of substandard existing housing, or of housing in decadent or unprotected neighborhoods, would be to imperil a program dedicated to the development of better housing conditions and of sound housing finance.

This circular indicates the qualities in a residential property and its environment which will result in a favorable insurance rating of the mortgage covering it. It states also, in certain instances, minimum requirements, the absence of which in a given case will render a mortgage ineligible for insurance.

Among the topics treated are minimum neighborhood requirements, standards of land utilization, design, services and equipment, planning and accommodation, minimum construction standards.

SUBDIVISION STANDARDS

Circular No. 5. Subdivision Development. Standards for the insurance of mortgages on properties located in undeveloped subdivisions. Title II of the National Housing Act. Federal Housing Administration. Washington, D. C., January 10, 1935.

Subdividers have in the past done pretty much as they pleased. It has been common practice to sell lots in places where there was no need for them and where the streets, indicated by plowed furrows, bore no relationship to nearby highways or to more distant city streets. The Division of Town Planning of the Department of Public Welfare of Massachusetts, in its annual report for 1934, estimates that there are in the country probably enough laid-out but undeveloped lots to care for 100,000,000 people. The statement is made in support of needed State legislation and is followed by the argument: "These improperly located and badly planned subdivisions necessitate many miles of unnecessary streets and services. Our industries and businesses do not plan for the utmost inefficiency and expense, and it is time for our taxpayers' associations, made up mainly of industrial and business men, to support sound planning simply because of its reaction on local expenses."

This reference to local expenses by the Massachusetts report suggests that the following paragraph in Circular No. 5 of the Federal Housing Administration is in line with rising sentiment: "The real estate tax situation shall be such that there is not existing or anticipated a disproportionate burden of taxes upon residential properties; not to exceed 50 per cent of the residential lots shall have delinquencies of more than two years' standing against them on account of the nonpayment of real estate taxes . . . or of special assessments."

Among the subheads in the Circular are minimum physical and financial requirements, desirable standards, methods of overcoming defects in existing developments. Subdivisions must contain or be convenient to schools, markets, parks and playgrounds, places of employment, means of transportation and so on.

LOW-COST HOUSING PROJECTS

Circular No. 3. Low-Cost Housing. Insurance of mortgages on low-cost housing projects under Section 207, Title II, of the National Housing Act. Federal Housing Administration. Washington, D. C., November 27, 1934.

The National Housing Act provides for the insurance of mortgages upon two general classes of property:

(1) Properties occupied by one- to four-family dwellings.

(2) Properties comprised in low-cost housing projects occupied by a larger number of family units, either in one building or in a group of buildings.

The Federal Housing Administration may consider the insurance of a single mortgage upon a property comprising more than four family units only when the application satisfies the Administration as to conformity with the regulations herein set forth. All properties falling into this general class will be referred to as low-cost housing projects.

The following general classes of mortgage upon low-cost housing projects are eligible for insurance:

(1) Mortgages executed by any properly constituted Federal, State, municipal or other public authority, which is regulated or restricted by law as to rents, charges, capital structure, rate of return and methods of operation in a manner and to an extent satisfactory to the Administrator.

(2) Mortgages executed by any private limited dividend corporation, organized under a State housing law, which is regulated and restricted by such law as to rents, charges, capital structure, rate of return and methods of operation in a manner and to an extent satisfactory to the Administrator, and

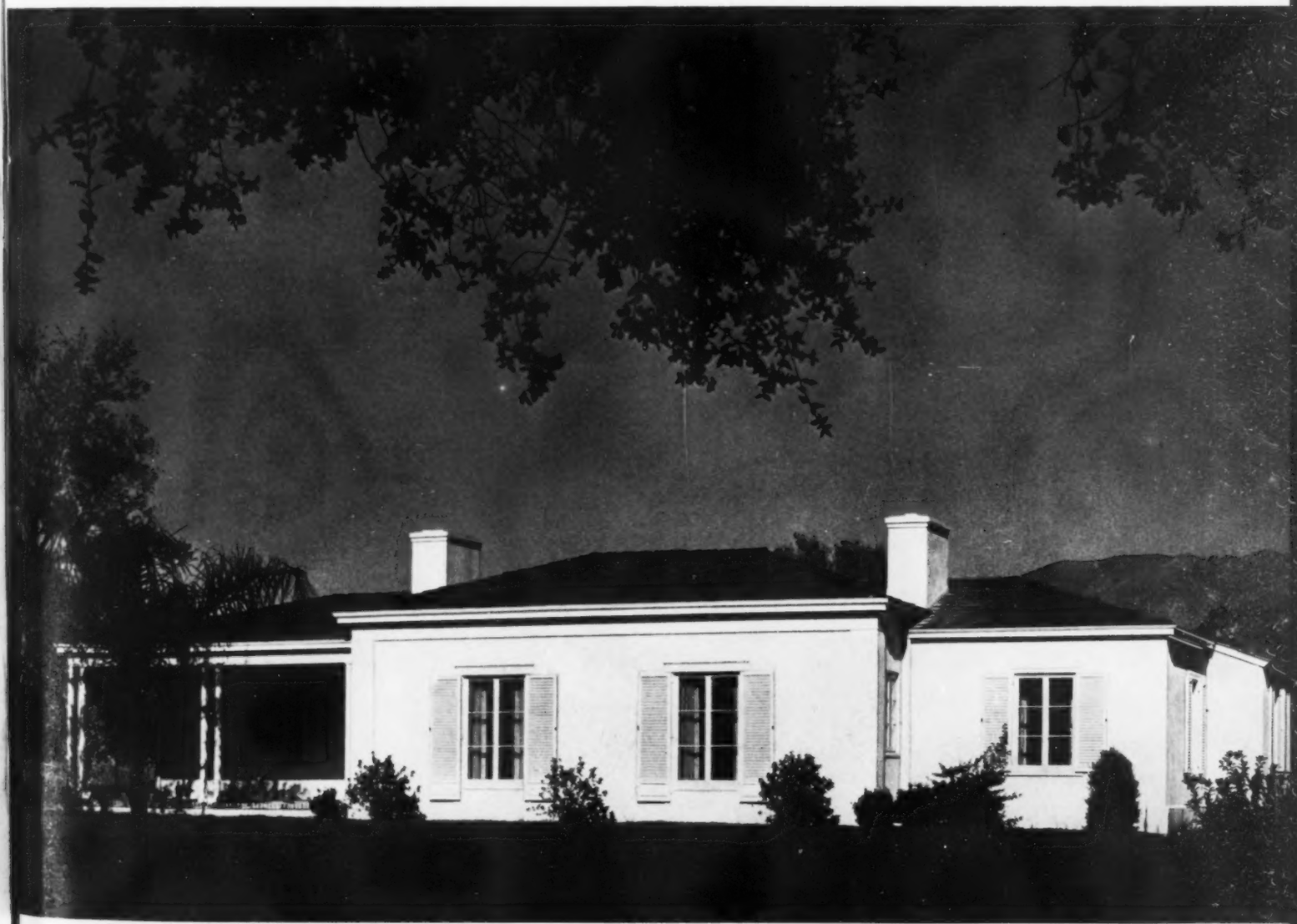
(3) Mortgages executed by any private limited dividend corporation which, though not organized under a State housing law, is organized solely for the purpose of erecting, owning and operating such low-cost housing projects and is, by the terms of its certificate of incorporation, or by contract, regulated or restricted as to rents, charges, capital structure, rate of return and methods of operation in a manner and to an extent approved by the Administrator.

The topics covered include projects of public housing authorities, projects of private limited dividend corporations, submission of applications, maximum rentals, determination of insurability, economic and social considerations, legal considerations, physical structure, design and livability, value, cost and financial structure, management. The building plan criteria, while briefly stated in this circular, are developed in detail in the forthcoming publication "Sample Plans," of which the substance is reported in this issue of THE RECORD.

PORTFOLIO

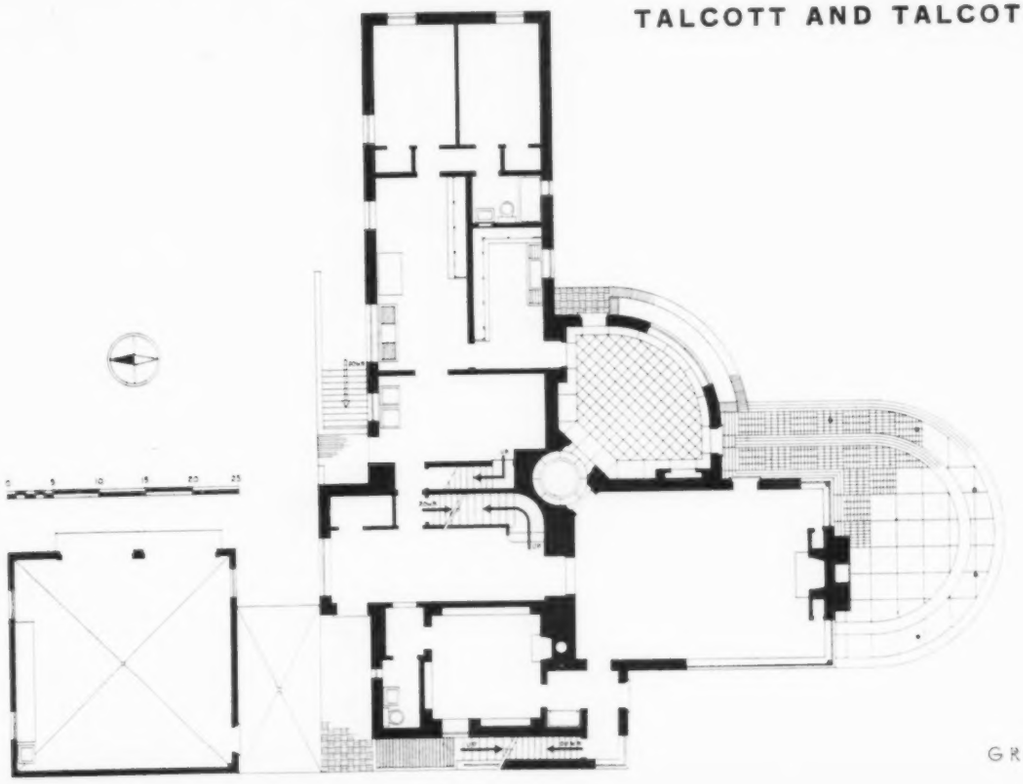
OF SMALL HOUSES

HOUSE OF H. S. PARSONS
SAN MARINO, CALIFORNIA
PALMER SABIN, ARCHITECT



Photograph by George D. Haight

TALCOTT AND TALCOTT, ARCHITECTS



GROUND FLOOR PLAN

Photographs by Richard Garrison

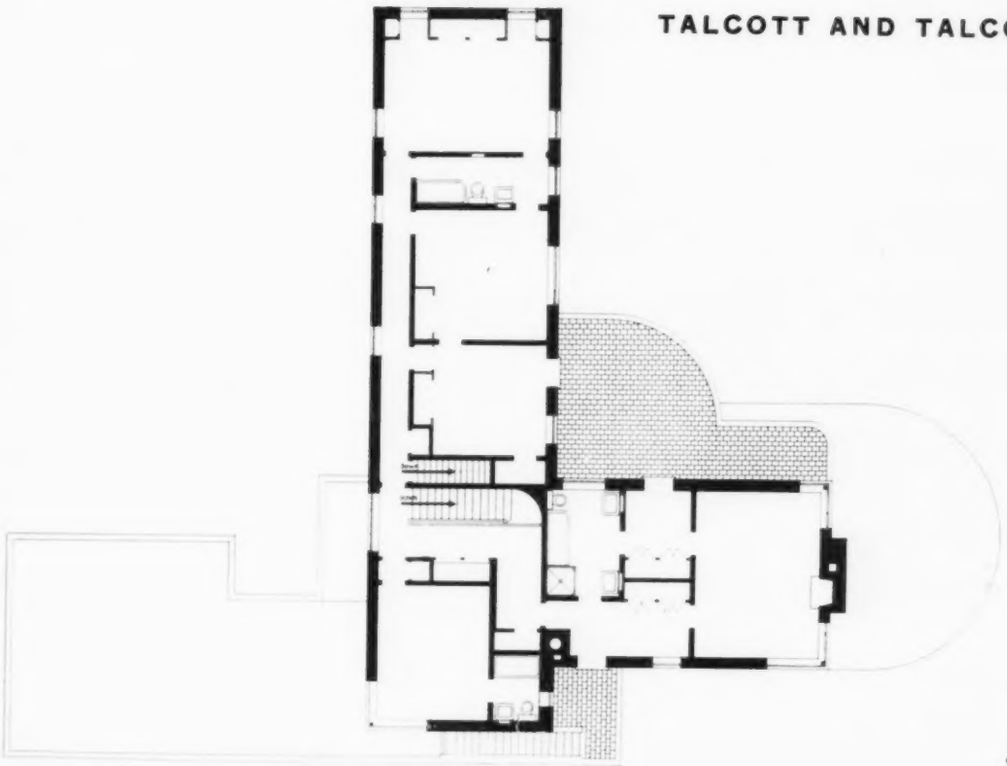
HOUSE OF OSTROM ENDERS . . . . . AVON, CONNECTICUT

Among the planning requirements the following were most important: Children's rooms which could be cut off from the rest of the house, so that when the children grew up and left home, the parents would not have the feeling of living in a large house with many empty rooms. Outside stairway to give direct access to the owners' quarters and to permit them to return from hunting or riding without tracking through the main hall. Dining room adjacent to porch to allow outside dining in spring, summer, and fall. The house is painted white with red doors and black steel sash. Through the use of venetian blinds and shades of various colors in the different rooms, a colorful effect is obtained in the façades. The interiors are painted in plain flat colors.

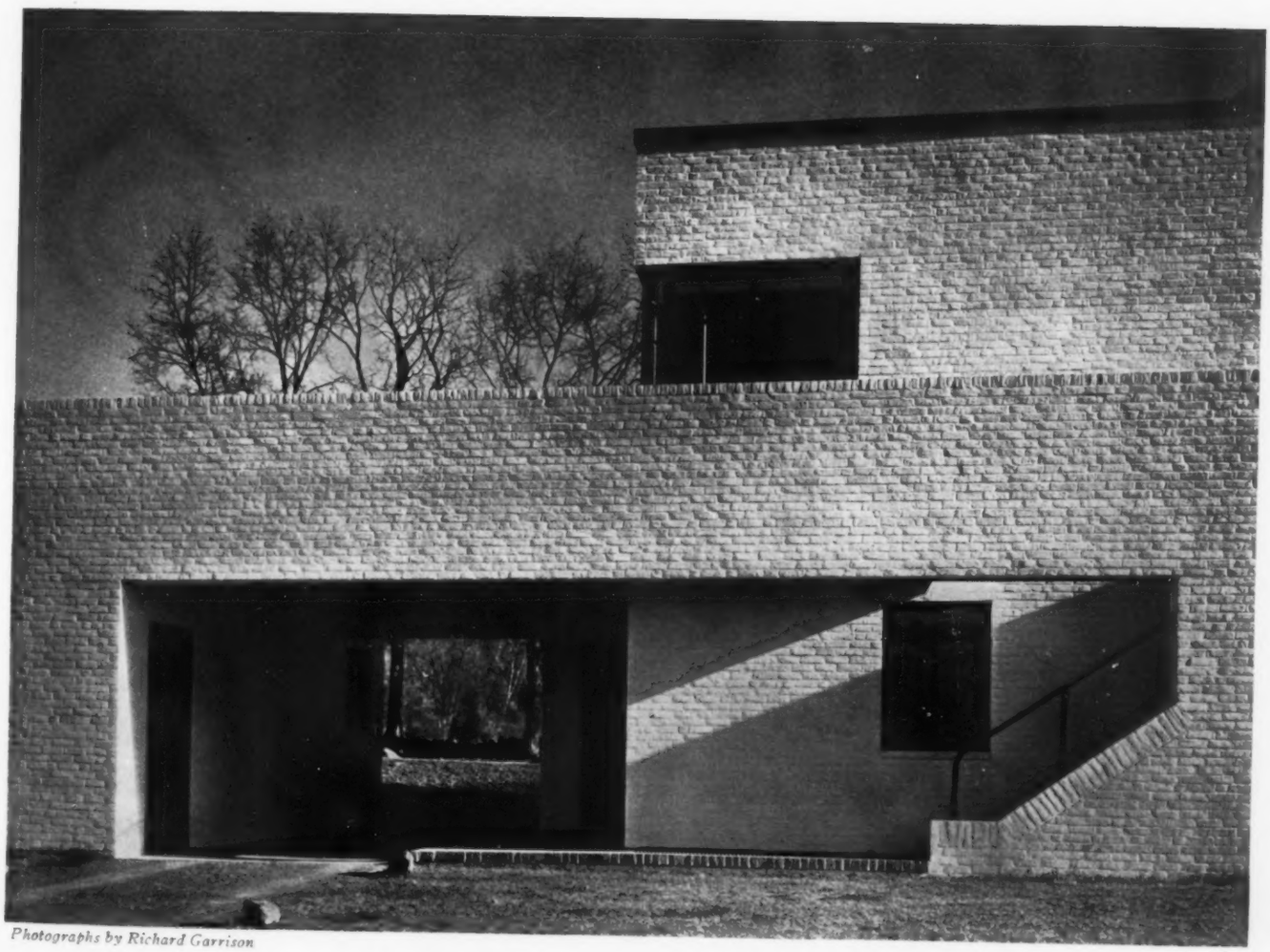
HOUSE OF OSTROM ENDERS . . . . . AVON, CONNECTICUT

The house is built of 8" hollow tile bearing walls with a 4" brick veneer, furred and plastered on the inside. Floors and partitions are of wood. The main roof is Barrett specification on wood joists and is insulated with cork and rock wool; it is drained by interior leaders. The terraces over the dining room and at the head of the outside stairway are tiled. Windows are stock steel sash. The interiors are simple, with plain trim, flush doors, and plain plastered walls throughout, except in the library which is finished in brick. There is a white marble floor in the hall, a rubber tile floor in design in the dining room, and linoleum floors in the service quarters and baths; elsewhere, strip oak flooring. Recessed ceiling lighting fixtures throughout are used for general illumination.

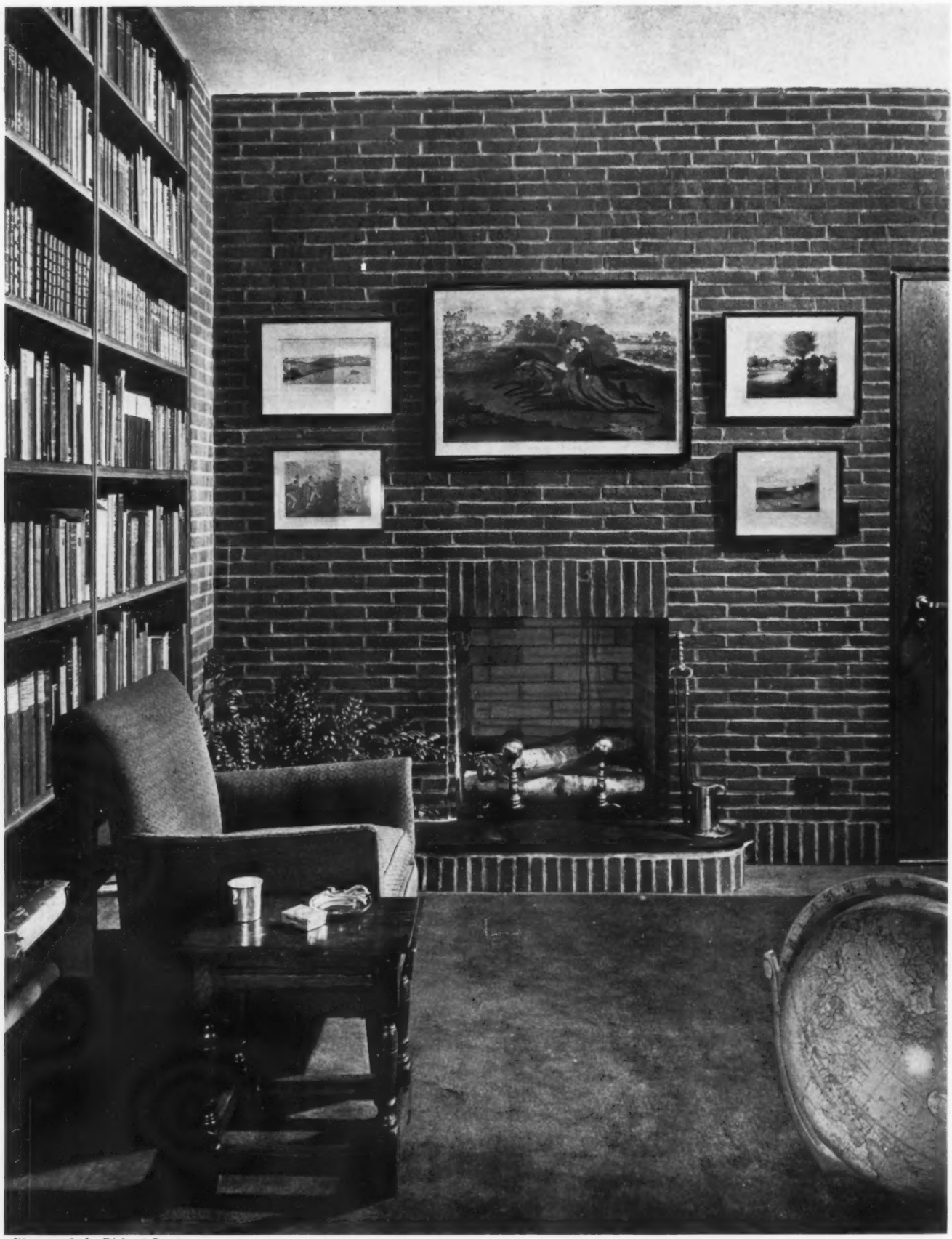
TALCOTT AND TALCOTT, ARCHITECTS



SECOND FLOOR PLAN



Photographs by Richard Garrison



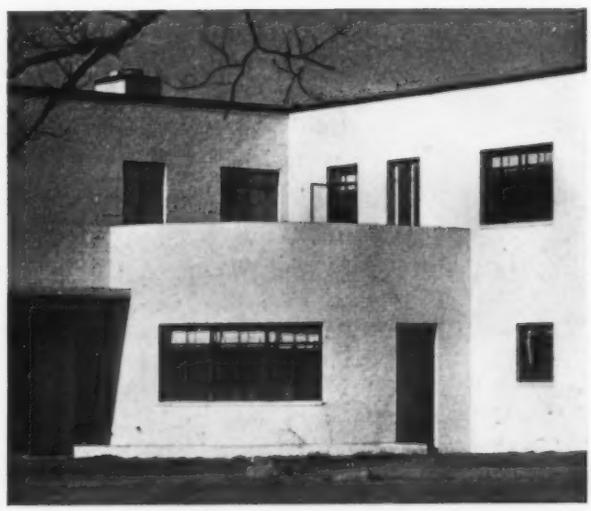
Photographs by Richard Garrison

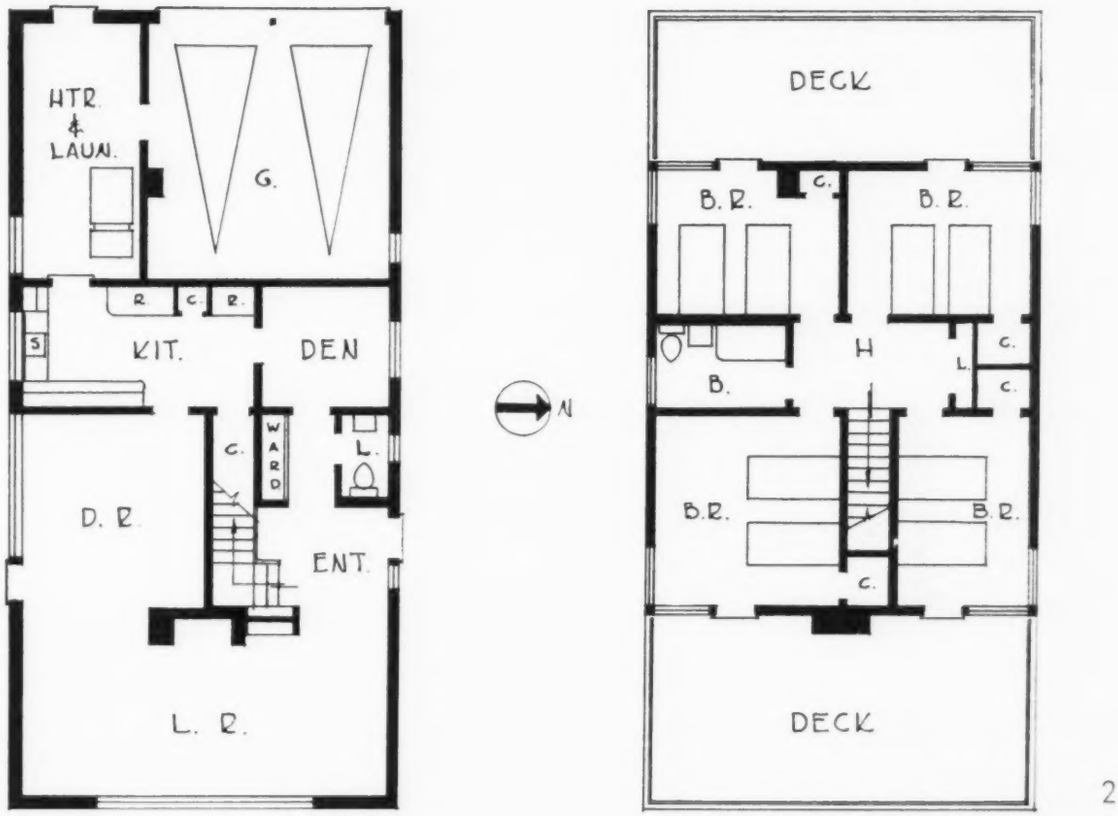
HOUSE OF OSTROM ENDERS, AVON, CONNECTICUT . . . . . LIBRARY

LIVING ROOM . . . . . TALCOTT AND TALCOTT, ARCHITECTS

Photographs by Richard Garrison

HOUSE OF OSTROM ENDERS, AVON, CONN.—TALCOTT AND TALCOTT, ARCHITECTS

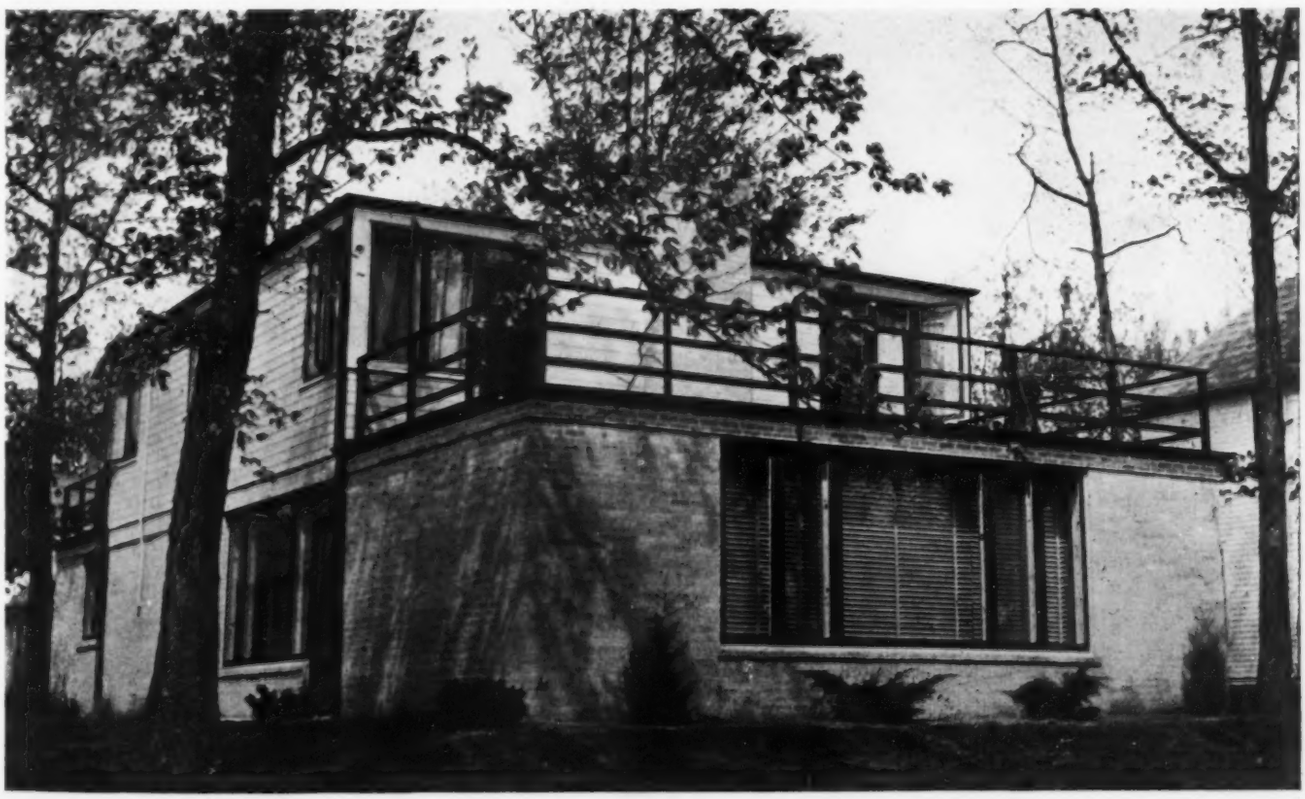




1 2

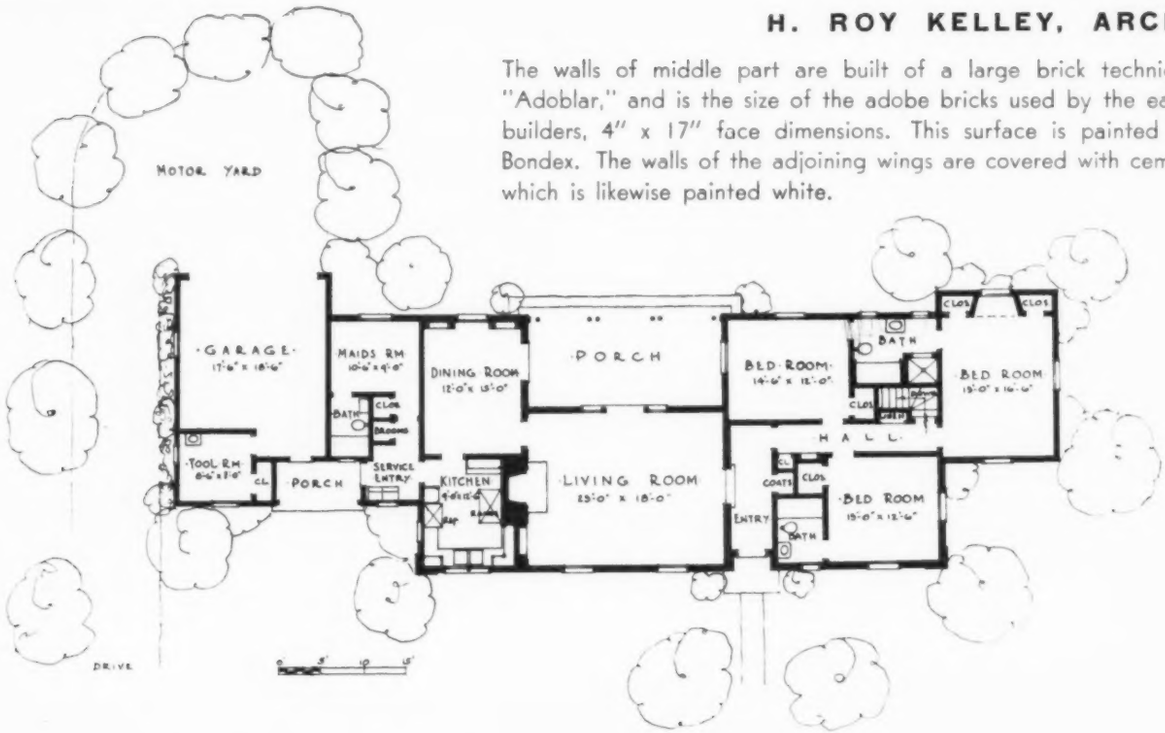
Standard materials used throughout. Total cost of house: $8,000.

HOUSE AT KAUKAUNA, WISCONSIN — GEORGE FRED KECK, ARCHITECT



H. ROY KELLEY, ARCHITECT

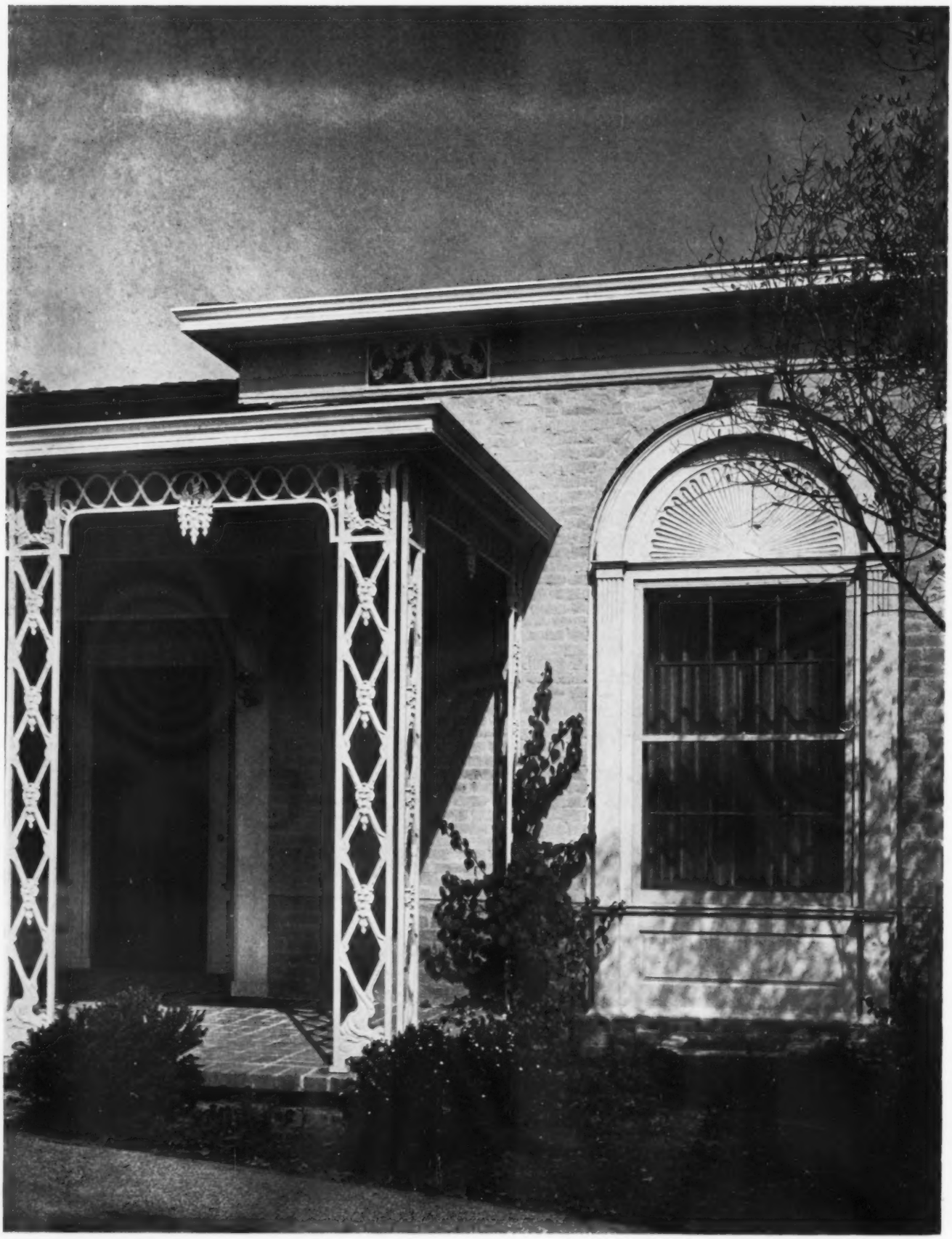
The walls of middle part are built of a large brick technically called "Adoblar," and is the size of the adobe bricks used by the early Spanish builders, 4" x 17" face dimensions. This surface is painted with white Bondex. The walls of the adjoining wings are covered with cement plaster which is likewise painted white.



Photographs by George D. Haight

Exterior trim and windows are painted white. Entrance door and shutters are sott light yellow. The roof is shingled, soft brown in color. The steps, porch, floors ana walks are of red brick.

HOUSE OF MAJOR L. TOPLITT AT BRENTWOOD HIGHLANDS, CALIFORNIA



HOUSE OF MRS. J. G. OWSLEY AT SAN MARINO, CALIFORNIA

Photographs by George D. Haight

GARRETT VAN PELT, ARCHITECT

The exterior walls are constructed of brick, washed very pale ochre color with warm ochre trim and Naples yellow wainscot under the porch. The ornamental cast iron of porch is painted ivory. The shingle roof is of natural aging. The living room is designed in Georgian and is featured by a high ceiling and knotty pine paneling. The dining room looks into a formal garden in the rear of the house.

Photographs by Gustav Anderson

"THE ARLINGTON" — HOUSE AT HARBOUR GREEN, MASSAPEQUA, L. I.

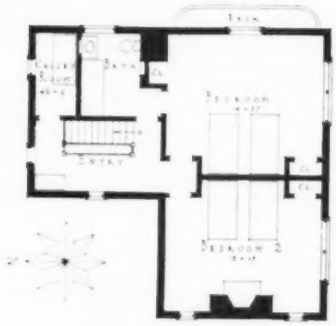
RANDOLPH EVANS, ARCHITECT

This house was built for sale by the Harmon National Real Estate Corporation as one of nearly a hundred neighboring houses which have been erected in the past few years. This house is one of the most recent. It is heated with a coal-burning boiler and a straight steam heating system. The floors throughout are oak except in the bath and kitchen which are finished with tile and linoleum. Walls are covered with period wall papers over three coats of plaster on spruce lath and the trim is pine. The second floor provides space for two future bedrooms and bath. The plumbing for the second bath is roughed in, and fixtures and finish may be provided by the owner at any time.

HOUSE OF DR. I. H. TULKIN AT ORCHARD HILL, NEW YORK

RANDOLPH EVANS, ARCHITECT

The house overlooks the White Plains valley and was designed so as to make the most of the natural slope and of distant views. The two-car garage is under the lowest corner of the house and connects to the basement through a fireproof door. The basement was finished with whitewash; dark red paint was used on the floor. At the top of the stair from the basement is a small vestibule that opens on the terrace and provides a service entry. Terrace, porch and dining room were planned so as to secure the distant views. The house is decorated with Colonial wall papers.



WEEK-END HOUSE AT CANTON, MASSACHUSETTS

GORDON ALLEN, ARCHITECT

J. HAMPDEN ROBB, ASSOCIATE

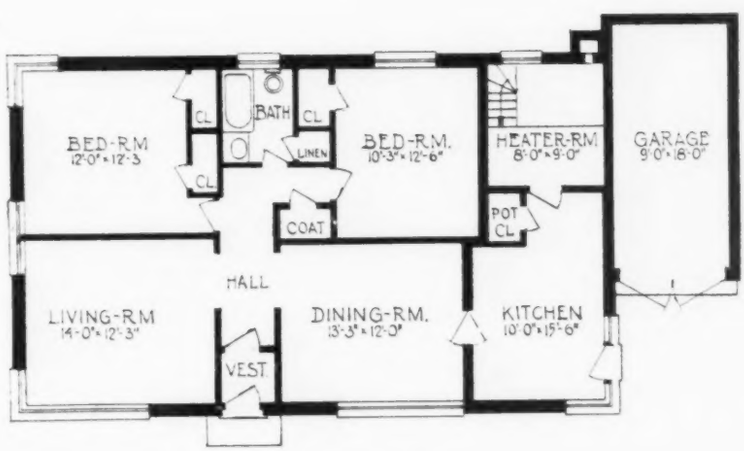
This house is of wood frame construction. The outside stucco is a peach color. The roof is black slate and the chimneys are brick painted to match the slate. The gutters and conductors are leaded copper. The terrace has bluestone flagging, and in one corner has been planted a crab-tree in the hole of an old well-stone from New Hampshire. All windows are steel casements. The living room has a black Zenitherm floor and a black cast stone mantel. The house is constructed at a cost of $11,600, or 50c a cubic foot.

Photograph by Hickman Studio

HOUSE OF CHARLES G. G. SCHMIDT AT LYNBROOK, LONG ISLAND

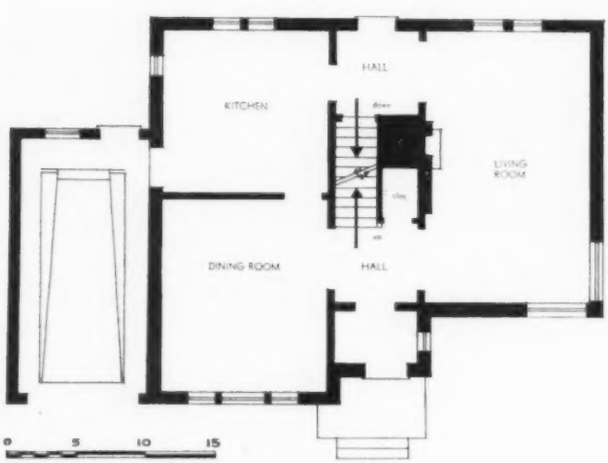
C. F. ROSBORG, ARCHITECT

This house was designed and built to meet a budget of $5,000. The cost includes finished hardware, electric work, lighting fixtures, complete plumbing, and a one-pipe steam heating system with oil burner. The exterior walls are constructed of cinder concrete blocks: a one-inch air space separates the eight-inch exterior construction from a light wall of cinder units on the inside, thus providing insulation. Interior partitions are also cinder concrete blocks, 4" thick and finished with paint applied directly on the masonry. The reinforced concrete floor is raised above ground level to provide circulation of air underneath.



HOUSE OF LONGUEUIL, QUEBEC, CANADA—ARMOND BOURBEAU, ENGINEER

This house is constructed of 8-inch concrete blocks finished in stucco and plaster. The floors are $2\frac{1}{2}$-inch concrete slabs on specially treated wood joists. The main partitions are 6-inch concrete blocks finished in plaster. The cost, including air conditioning equipment, but exclusive of land and furniture: 30c a cubic foot.



Photographs by Rice Studio Limited

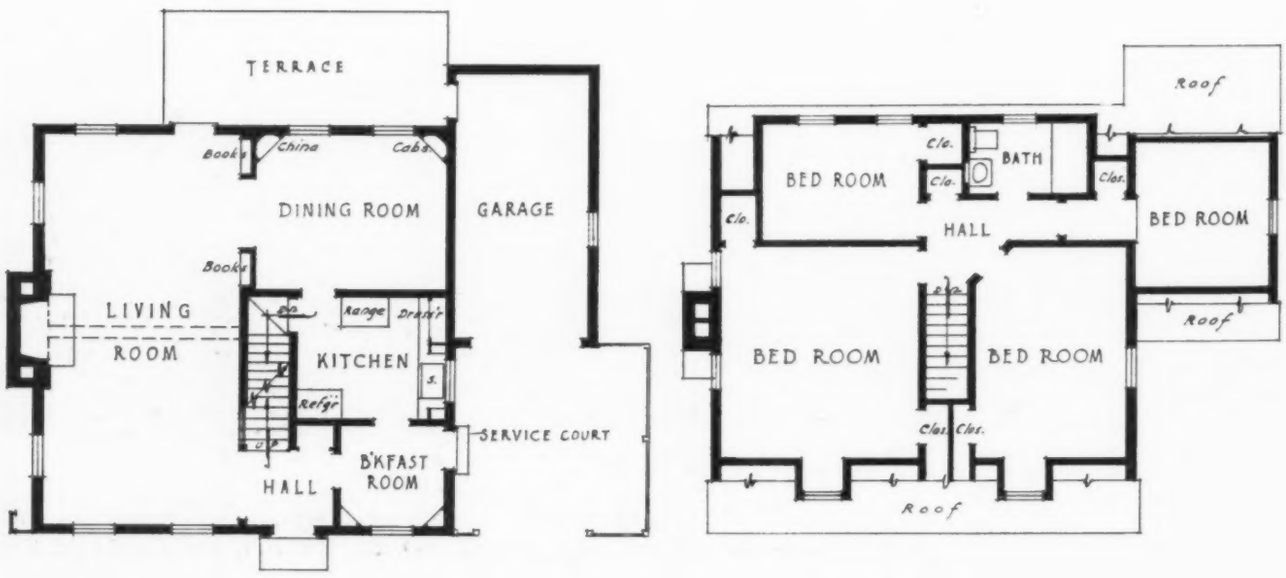
HOUSE OF LONGUEUIL, QUEBEC, CANADA—ARMOND BOURBEAU, ENGINEER

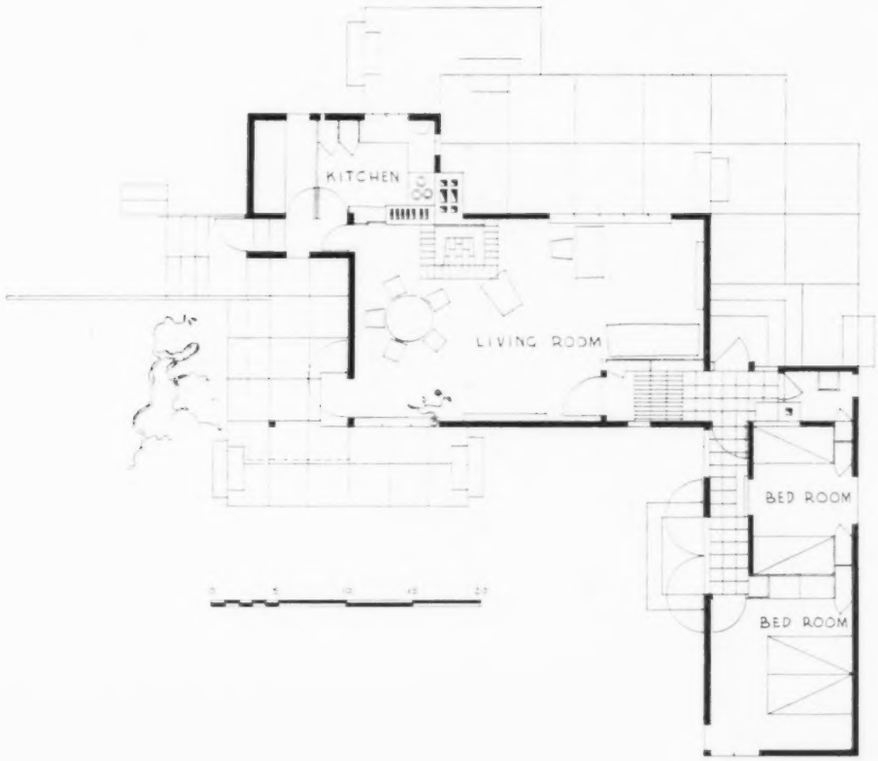
HOUSE OF
GRANVILLE H. STEARNS

ROCKVILLE CENTRE
LONG ISLAND

MAXMILLIAN R. JOHNKE
ARCHITECT

Photograph by Murray M. Peters



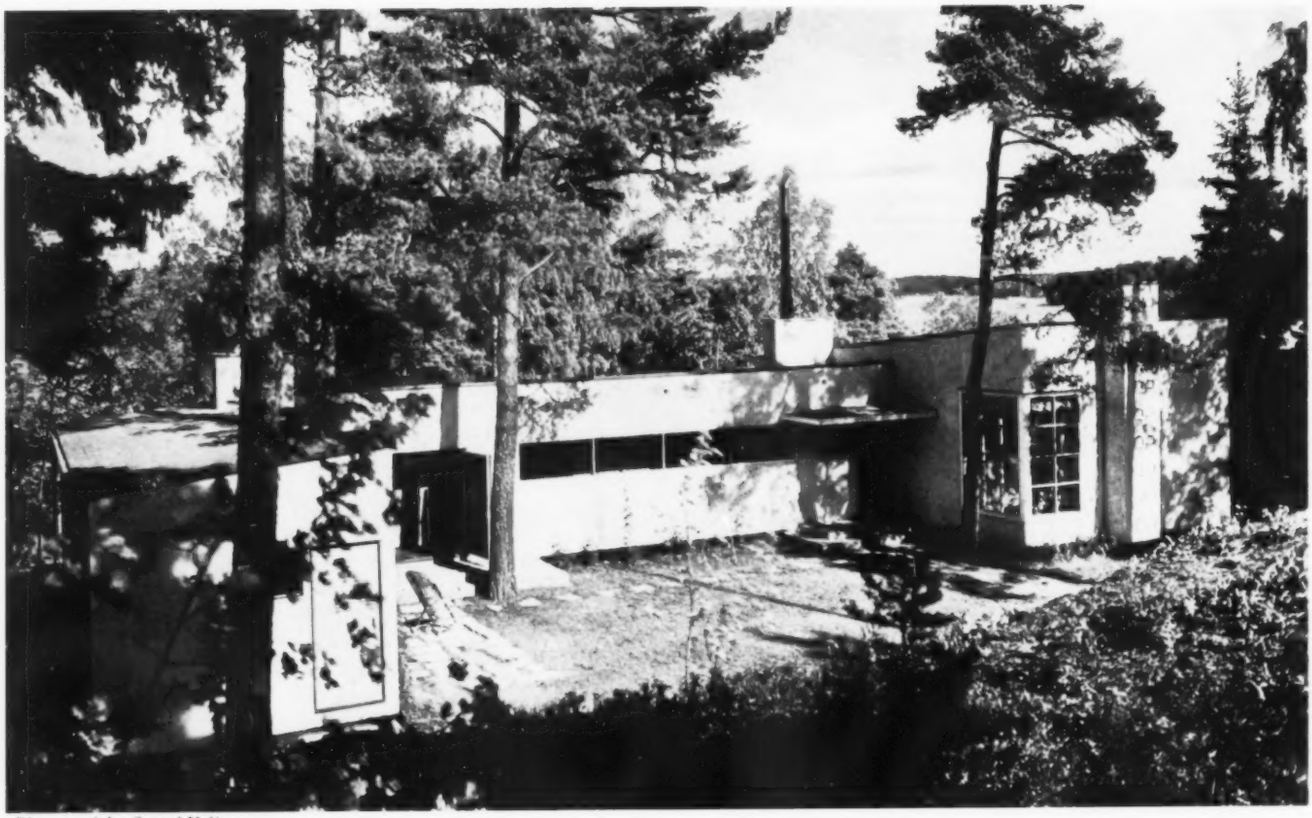


WEEK-END HOUSE OF DR. E. M. EKMAN

HIRVENSALO IN FINLAND

ERIK BRYGGMANN ARCHITECT

Photograph by Gustaf Welin

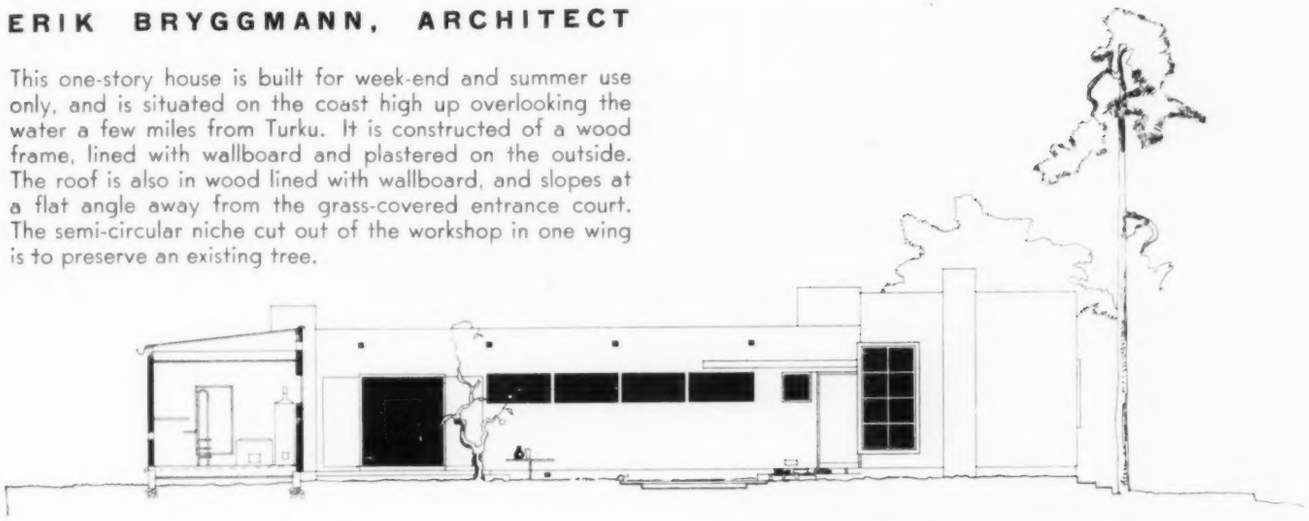


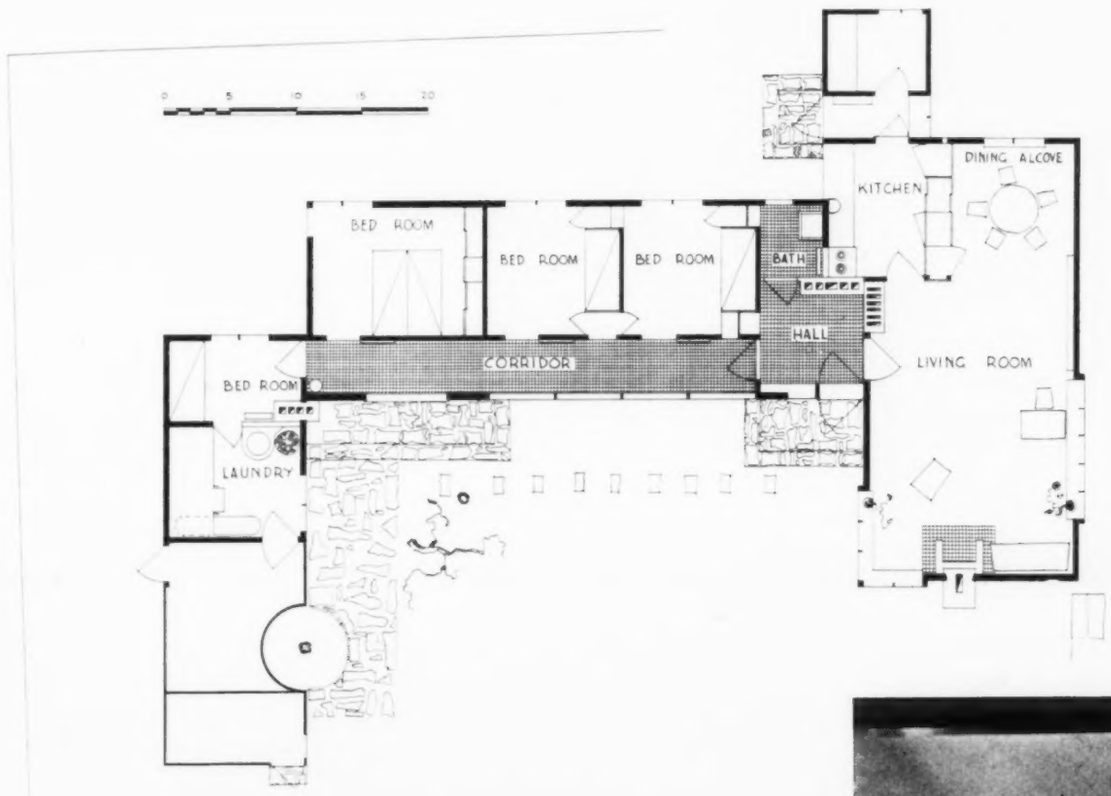
Photograph by Gustaf Welin

WEEK-END HOUSE OF DR. ERKKI WAREN AT RUNSALA IN FINLAND

ERIK BRYGGMANN, ARCHITECT

This one-story house is built for week-end and summer use only, and is situated on the coast high up overlooking the water a few miles from Turku. It is constructed of a wood frame, lined with wallboard and plastered on the outside. The roof is also in wood lined with wallboard, and slopes at a flat angle away from the grass-covered entrance court. The semi-circular niche cut out of the workshop in one wing is to preserve an existing tree.





HOUSE OF DONALD P. NICHOLS AT POMONA, CALIF.—MARSTON & MAYBURY, ARCHITECTS

Photographs by Hiller Studio

Marceau

By GEORGE S. CHAPPELL

A BEWILDERED ARCHITECT

MODERN SCIENTIFIC DEVELOPMENTS HAVE ONE OLD PRACTITIONER CRYING FOR HELP

For a long time I have felt that I was falling hopelessly behind the architectural parade. More and more I have become conscious that, as science invaded the field of design, the less I knew about it. If I speak of the "house" rather than of larger enterprises such as apartments and office buildings, it is because my professional practice has been limited almost entirely to the small and lovely rather than the large and lucrative.

In this smaller field I have felt, until recently, that I had acquired a certain competence. Most of my clients still speak to me and a few are actually intimate. One or two have gone so far as to give me "repeat orders," the most lustrous crown a client can bestow . . . and by this I do not mean that they have asked me to alter what I did for them originally. And yet, in spite of this sense of satisfaction in my professional past, the present and the future fill me with doubts.

The new language used in reference to the home leaves me baffling in the dark as to its precise meaning. If this occurred only in technical publications devoted to pure science I would not feel so depressed about it, such treatises having always been beyond me. Unfortunately it is equally difficult for me to read current architectural magazines with anything like adequate intelligence. The only articles in them which I understand fully are my own. Thus I am thrown back on the "hearth and home" variety with pictures of rock gardens which I can grasp. Mechanically I fear I inherit a definite weakness from my father who used to say, not without a queer pride, that he could understand the operating principle of a pair of scissors but not that of a wheelbarrow.

Even so, in the past I have been able to master the rudiments of such ancient innovations as, say, "indirect radiation," to speak of heating for a moment. When I first saw the special ducts which led fresh air from the great outdoors to their appointed radiators I recognized at once their improvement over the primitive cold-air box with its hand-operated slide which my sire used to operate after a savage scrutiny of the outside thermometer. I can still hear him muttering as he tramped cellarwards, and I recall, too, the many other trips he made in the same direction, to stoke, to check, to rake, to shake, or otherwise to regulate the source of family comfort. Incidentally, the poetically described task of "keeping the home fires burning" was not unaccompanied by a certain amount of cursing particularly as the resultant temperature was never evenly distributed and never, by any chance, suited the thermal whims of all the members of the household. I have often thought that if some unborn genius could have regulated the temperature of my Aunt Sarah, who could feel a draft in a hermetically sealed room, he would have done a tremendous service to the cause of domestic peace.

How completely the old order . . . or was it disorder? . . . has passed! For now all the matinal and nocturnal pastimes referred to are done for us by gadgets. The sweet (in retrospect) intimacy with the cellar is gone. Many a man hardly knows where his cellar stairs are. The furnace feeds itself, or goes on a diet, dampers open or shut at the behest of a robot . . . or, at least, they're supposed to. The somber early-American furnace with its Buddha-like branching of arms is replaced by a neatly jacketed cabinet, dressed like a bride "in the conventional white," banded with brass and ornamented with tags, discs, dials and gauges. Motors purr;

ratchets click. The cellar has become an engine room.

Upstairs there is more mechanization. Dining rooms, kitchens, pantries and baths have gone electric in a big way. Modern cooking schools, I am told, include post-graduate courses in electrical engineering. Only the iceman, sitting apart on a cake of old-fashioned ice, howls mournfully.

All this I can understand and approve. But we have gone further, oh, much further! We used to speak mirthfully of "weather control." It was a huge joke, a cosmic wise-crack that already sounds a bit hollow. "Every one talks about the weather," we chortled, "but no one does anything about it." That was a good one, all right! And now, in this very magazine, we may contemplate a device which "supplies automatic compensation for all outside weather variables, adjusting the operation of heating equipment to meet the ever changing outside weather conditions before their effects are noticeable indoors." So they *are* doing something about weather control after all! It is all very inspiring and very hard to understand.

But the architectural magazines are nothing compared to what I run up against in the really technical organs where I find myself completely bogged in the new world of building science. Why, the very word "furnace," on which I was raised, is practically obsolete, being replaced by ponderous references to "vapor turbines," "motor units" and the like. "Air conditioning," too, among the experts, is a household word.

Treatises on this subject of air conditioning are not so difficult to understand up to a certain point, by which I mean the title or, at best, a little beyond it. For instance, when I read in a recent copy of *Heating, Piping and Air Conditioning* the title, "Choosing the Right Air Conditioning System," I said to myself, "Chappell, here is your meat. Go to it." The results, as usual, were disheartening. I got the first two pages fairly well but when the author, a Mr. Canney, with a lot of initials after his name, began really to bear down and said, "The automatic cycling controls which modulate the supply are governed by roof thermostats on the orificed buildings which have individual standby and bypass valves," well, it conveyed to me a sort of cubist picture of a man on a bicycle trying to negotiate a series of saw-toothed roofs covered with detour signs and skylights. I realized that this couldn't have been Mr. Canney's intention, so I gave up.

But this isn't the half of it. "Solar radiation" and "ionization" are only two of the other popular pastimes of our up-and-coming scientists. Just a week ago I had a chance . . . a golden opportunity, I said to myself . . . to learn something about these mysteries. I was invited to contribute something gay and amusing at a banquet of noted engineers in Buffalo. I accepted joyfully, after making satisfactory arrangements with the treasurer. While there, I thought, I will religiously listen in on all the serious deliberations, even if it kills me. I did, and it almost did. I haven't been the same man since.

For the better part of two days, when I was not practicing a little private and personal "humidification" in the Statler café, I listened to papers on "Heat Interchanges as Recorded by the Thermo-Integrator," "Recent Developments in Coal Ashes," . . . imagine anything *new* developing in coal ashes! . . . "Metallic Insulation as Applied to Solar Radiation," "Large-Ion Content in Small Rooms," . . . I may have balled up the titles a little, but that's about the way they went.

Out of the mental mêlée I garnered a few impressions that I think I ought to pass along, if only to get rid of them. The "ion," which I had never met before except in crossword puzzles where I can spot it like a flash, I assume to be a sort of electric microbe or molecule which is to air what vitamin B . . . or is it D? . . . is to spinach. Talking one morning with Mr. Willis Carrier, I said carelessly, just to see if I was making any headway, "Mr. Carrier, too many ions in the air are, I suppose, as bad as too many ions in the fire." "If I am wrong, correct me," I added. "I hardly think it would be worth while," he said with a sad smile.

"Metallic Insulation as Applied to Solar Radiation" (or vice versa, it works both ways), apparently consists in spilling or bouncing the heat off a building onto the adjacent territory. This may be dandy for the occupants of the building but might be tough on the neighbors. In my youth I used to flash a mirror from my office window at a stenographer across the street but it never came to anything and I look on the whole solar business with considerable doubt.

One of the experts at the convention, a soft-spoken gentleman named Hutchinson, seeing my bewilderment, kindly explained, "Solar radiation, as it now stands, is largely a matter of learning the language. What I mean, you must learn to per." "And just what *do* you mean?" I said, "'learn to per.'" "It's like this," he said. "If you went home and sat in the sun behind a plate-glass window, after you'd come to boil you'd probably jump up and say, 'Holy smoke, it's hot in here!' But the solar expert wouldn't do anything of the sort . . . oh, no, nothing as simple as that. First off, after he'd taken his own temperature, he would draw a graph on the wall . . . something like a roller coaster or a side view of the Rocky Mountains or any view of Mae West . . . then, on one side he'd jot down a column of figures. Any figures will do, . . . the date, the time of day, your automobile license number, and under these he would put a formula, something like Pi $\sqrt{5^2} \times R^3$—WT. Then he would say, after going into a huddle with himself, 'The wall transmittance of this room is .006 B.t.u. per foot per hour perhaps.' And his wife would say, 'O. K. Let's go to the movies.'"

For some reason I suspected Mr. Hutchinson was kidding me, so I retired to my room and grappled with a copy of the *Manual of Heating and Air Conditioning* that the author, Mr. Louis Harding, had given me. I have been studying it ever since and heartily recommend it to all serious students. It is the first book I have ever read in which I can't understand even the pictures, and I guess that's going some!

So you see I'm practically sure I shall never understand the new building sciences. I simply can't imagine heating a house with cold water or warming the kitchen by throwing the refrigerator into reverse. It's all beyond me. But there is one comforting thought, a real way out. When my next building problem heaves in sight I'm going to telephone to all those good lads I met in Buffalo and enroll experts on heating, ventilating, refrigeration, air conditioning, solar and lunar radiation, ionization, ozonation, oxygenation, thermal disintegration. . . . I'm going to line 'em all up, reserving only for myself the department of personal humidification. That I *know* I can handle.

Bachrach

JULIAN L. PEABODY

Julian Peabody, born in New York City on March 29, 1881, died at sea during the night of January 24, 1935, a victim of the Mohawk disaster. Not only has the profession of architecture been robbed of one of its ablest members, but this country has lost an outstanding citizen and a gentleman of the finest type.

After graduating from Groton School in 1899 and Harvard in 1903, he studied architecture for four years at the Ecole des Beaux Arts under the French architect, Henri Deglane. Twenty-four years ago he formed a partnership with Albert Wilson and Archibald M. Brown. He designed many types of buildings, including libraries, banks and schools, but was known principally as the creator of large country houses, conceived on generous but simple lines and executed with rare taste and quiet restraint.

His first executed work of importance was the Town Hall at Huntington, Long Island, won by him and Albert Wilson in competition, shortly before forming the firm of Peabody, Wilson and Brown. The day he died, he had just completed drawings for a house for his friend, Norman Hall, at Tahiti in the South Seas.

Painting water-colors was his favorite avocation. They comprised landscapes made in Tahiti, Guatemala, Southern France and many sketches of his beloved New England. These he exhibited in New York, Boston, Milwaukee and Washington.

A collection of his architectural work and of his water-colors will be shown in a memorial exhibition to be held at his office later in the year.

—A. M. B.

SLUM CLEARANCE HOUSING PROPOSAL DISTRICT NO. 5 MANHATTAN

A STUDY SUBMITTED TO THE HOUSING AUTHORITY OF NEW YORK CITY AS A SOLUTION FOR THE DEMOLITION AND REBUILDING OF THE SLUM AREA BETWEEN 60th AND 78th STREETS AND 2nd AVENUE AND THE EAST RIVER

Assistance in drafting provided by the Works Division Personnel of the Tenement House Commission

FINANCE / RENTALS / DENSITY
CORRELATION TO THE CITY PLAN

RENTALS

$9 per room per month for elevator and walk-up apartments. If elevator apartments rent at $9.60 per room, walk-up apartments will rent at $7 per room. Elevator apartments figured individually rent at $8.56 per month, walk-up apartments at $10.48 per room per month. No deductions have been made for prefabrication or mass production.

SUPERBLOCKS

By adhering to existing main traffic arteries and eliminating useless intermediate streets, large superblocks are formed. Each superblock becomes a community with no through traffic and containing two groups of apartment buildings and a central municipal recreation space.

APARTMENTS

5-story walk-up and 12-story elevator types. All buildings reached by means of dead end streets. All buildings have north-south orientation, except hotel type which has river exposure. All apartments have through ventilation.

DENSITY

40% Land coverage for all buildings in the entire development. Buildings average 364 rooms per acre.

PARKS — RECREATION AREAS

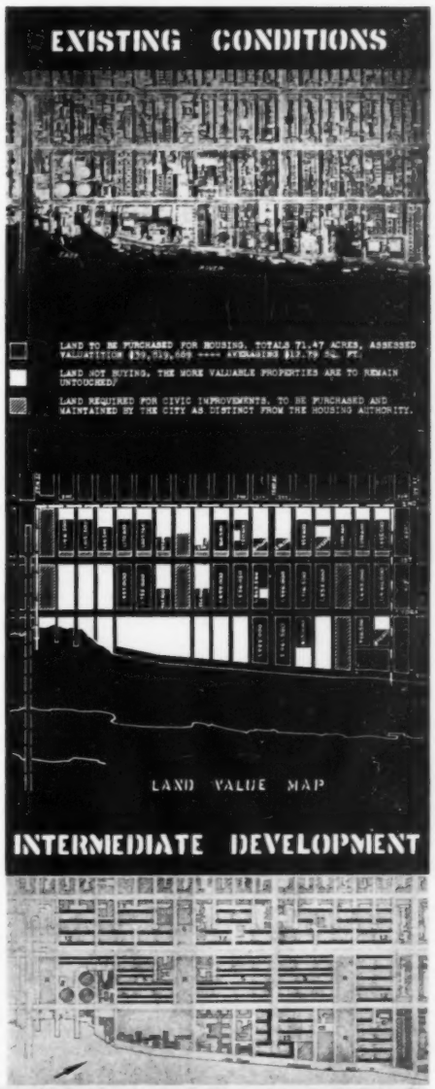
In all cases there are park spaces between buildings at least as wide as the buildings are high. These park spaces connect directly with the municipal recreation areas without interruption from through traffic streets. Adjoining the recreation areas are community center buildings, schools, existing churches, and all necessary buildings to complete the community social life. Municipal recreation areas and related buildings are maintained by the city as distinct from the housing and park spaces between buildings which are to be maintained by the housing authority.

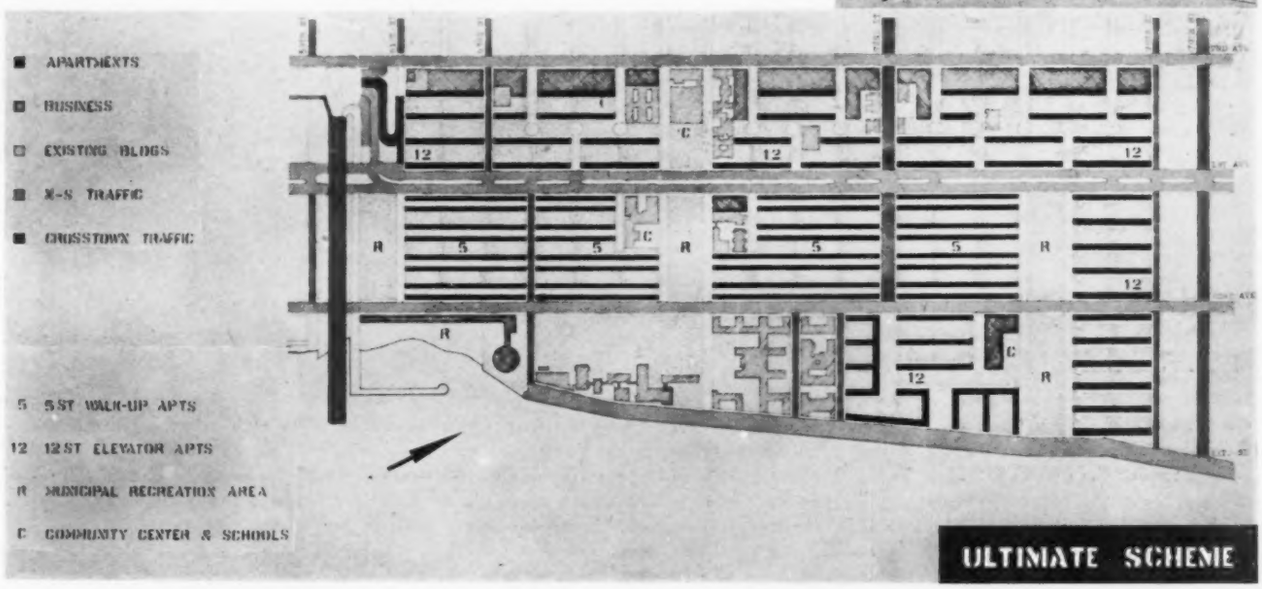
STORES

Necessary local stores are located at ends of buildings adjoining main traffic streets. A shopping district is proposed along Second Avenue; in keeping with the regional plan proposal "Second Avenue will become the Fifth Avenue of the east side."

CORRELATION TO CITY PLAN

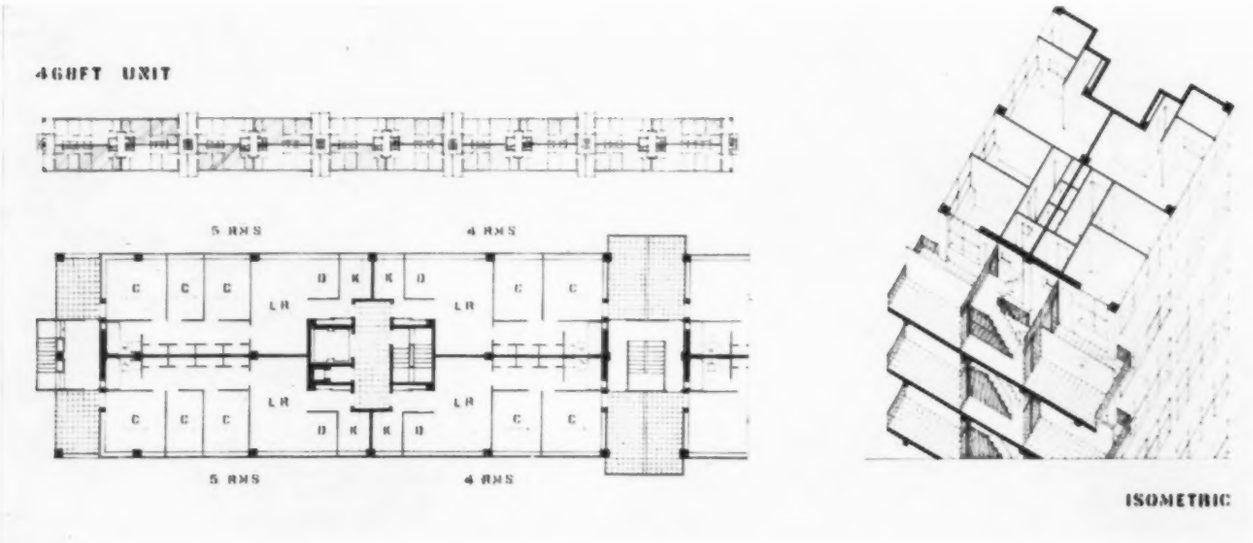
Undesirable industries, such as gas and power works, must eventually be removed. The bathing beach, a desirable feature in city life, will be possible after the cleansing of the East River. Owing to the present and future development of Manhattan, certain improvements are required to make this section, District No. 5, correlate and function properly with the entire city plan. To this end a block containing ramps and underpasses has been allotted for traffic relief of the Queensborough Bridge and, in conjunction with the regional plan proposal for an East River drive, 60 feet has been allowed for the eventual widening of First Avenue.


EXISTING CONDITIONS
LAND TO BE PURCHASED FOR HOUSING, TOTALS 71.47 ACRES, ASSESSED VALUATION $30,919,600 ---- AVERAGING $12.79 SQ. FT.
LAND NOT BUYING, THE MORE VALUABLE PROPERTIES ARE TO REMAIN UNTOUCHED/
LAND REQUIRED FOR CIVIC IMPROVEMENTS, TO BE PURCHASED AND MAINTAINED BY THE CITY AS DISTINCT FROM THE HOUSING AUTHORITY.
LAND VALUE MAP
INTERMEDIATE DEVELOPMENT



TYPICAL FLOOR PLANS

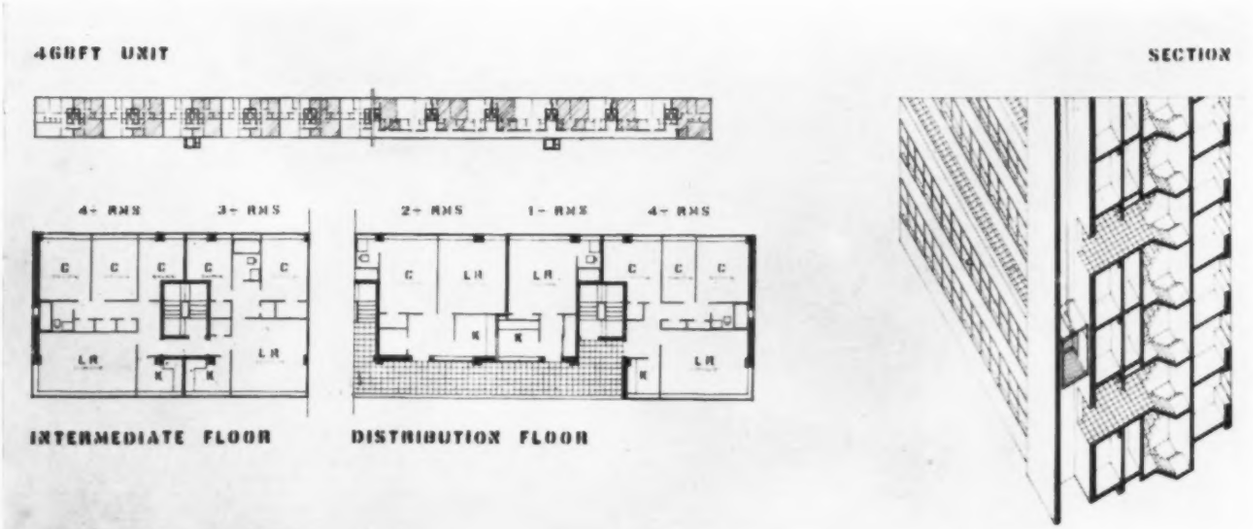
DIFFERENT TYPE APARTMENT UNITS



12-STORY ELEVATOR APARTMENT

The buildings run north-south separated by park spaces of 112 feet in width. Each building is composed of units of four apartments per floor to an elevator. These units are separated from each other by an open fire stair and individual terraces for each apartment, thus assuring through ventilation. All elevators are connected by means of a corridor on the roof. The north-south orientation affords sunlight for each room and in no case does any window receive less than a sky view of forty-five degrees. There are no apartments on the ground floor, this space being reserved for open loggias bordering the park, and game rooms, kindergartens, stores, etc.

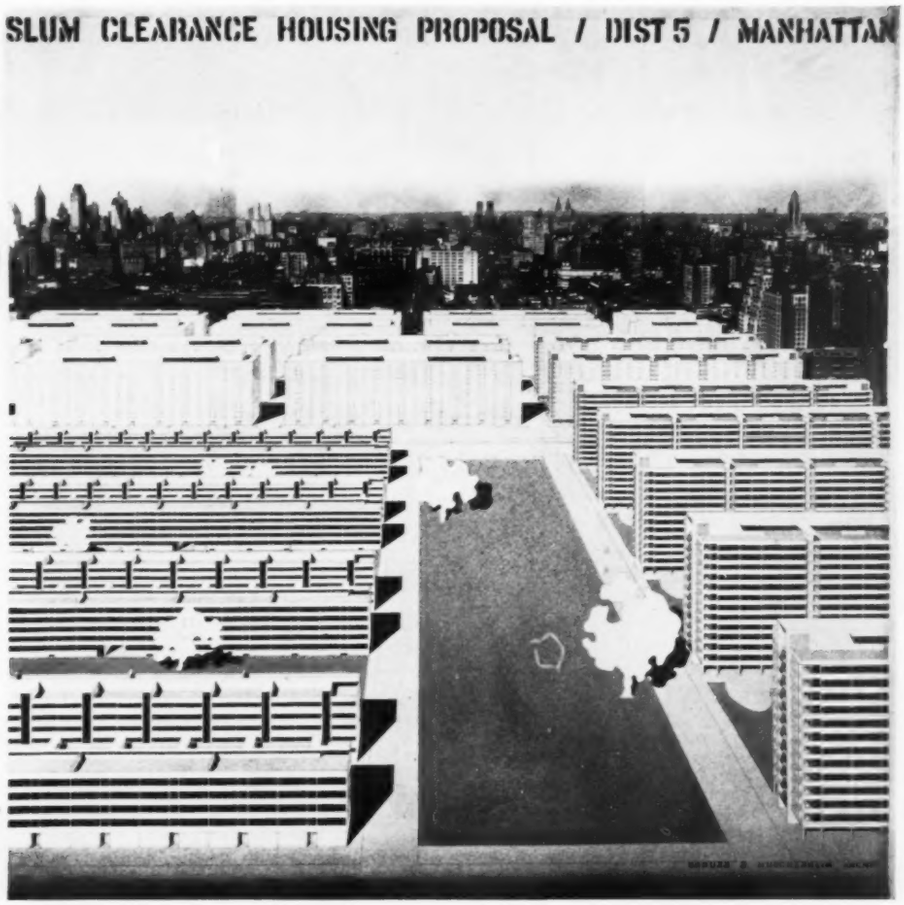
Buildings are 468 feet long and 35 feet wide, averaging 20 apartments per floor, or 84 rooms. Total apartments per building: 290. Total rooms per building: 1,008. (Kitchen and dinette counted as one room; bathrooms not counted; terraces not counted.) Number of square feet per room to gross floor area of building (including terraces): 195.



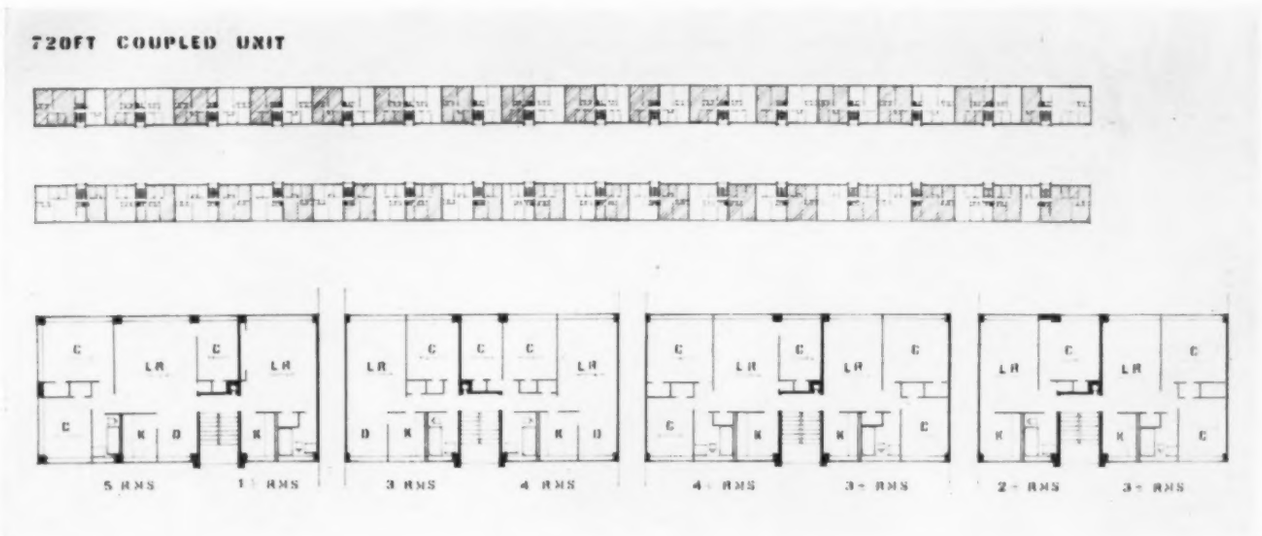
DISTRIBUTION FLOOR APARTMENT

Buildings are twelve stories high with distribution corridors on the fifth, eighth and eleventh floors. Distribution floors are served by two elevators. All remaining floors above the third are reached by walking one flight either up or down. The incinerators are grouped centrally next to the elevators and are accessible to all apartments by means of the distribution corridors. All apartments have through ventilation; those on the distribution floors have only entrance halls and kitchens on the corridor side which is left open to the outside air. These buildings are proposed as an alternate to the 12-story elevator apartments and would have similar conditions of orientation and park space. Buildings are 468 feet long and 28 feet wide, averaging 22 apartments per intermediate floor, or 79 rooms, and 22 apartments per distribution floor, or 49 rooms. Total apartments per building: 264. Total rooms per building: 858. (Kitchen counted as half room; bathrooms not counted.) Number of square feet per room to gross floor area of building: 183.

PERSPECTIVE VIEW OF
A RECREATION AREA



BROUNN & MUSCHENHEIM, ARCHITECTS



5-STORY WALK-UP APARTMENT

Two buildings are coupled back to back on a single entrance court. All kitchens, baths and secondary rooms face on this court which is forty feet wide. All major rooms have park exposure eighty-five feet wide between buildings. The buildings are fifty feet high and are composed of interchangeable units, each having two apartments per floor to a stair. These units, comprising the required percentage of different size apartments, vary in length and are easily arranged to fit different block sizes. The north-south orientation assures sunlight in every room and all apartments have through ventilation.

Buildings are 720 feet long and 25 feet wide, averaging 32 apartments per floor, or 107 rooms. Total apartments per building: 160. Total rooms per building: 535. (Kitchens counted as half rooms; kitchen and dinette counted as one room; bathrooms not counted.) Number of square feet per room to gross floor area of building: 168.

FEDERAL AIDS IN SMALL HOUSE FINANCING

By L. SETH SCHNITMAN

Chief Statistician

F. W. Dodge Corporation

More than 3,100 lending institutions, having total resources approximating $3,300,000,000, are now members of the Federal Home Loan Bank System, the first of the governmental agencies created to strengthen the credit base in the small house field. Through the Home Owners' Loan Corporation the Federal government arrested the deflation in home values which threatened to undermine real estate.

The business of building and loan associations has taken on a new significance with the advent of Federal Savings and Loan Associations. Federally-chartered, these model associations are under national supervision; in fact, the government itself has a financial stake in their success and solvency.

To increase the flow of capital into new houses and to restore confidence in home thrift institutions on the part of depositors, the government has created the Federal Savings and Loan Insurance Corporation which will supplement the Home Loan Bank System in raising standards of mortgage financing.

To encourage long-term amortized mortgages the Federal Housing Administration was created. Under its authority a Mutual Mortgage Insurance Fund has been established. It is believed that Federal operation of this fund will prevent the evils that have attended mortgage insurance by private companies.

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Information in following sections is based on data supplied by the Division of Research and Statistics, Federal Home Loan Bank Board.

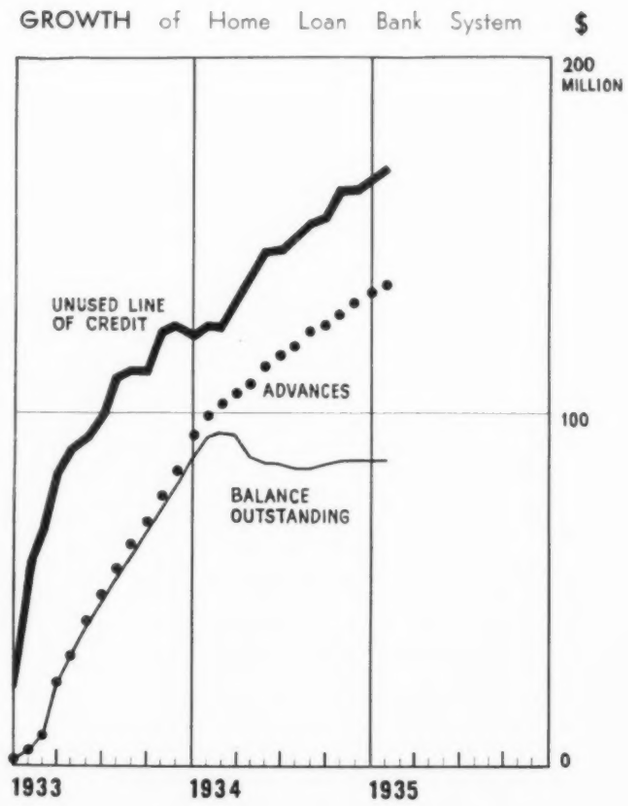
1. Federal Home Loan Bank System (organized in 1932)

The Federal Home Loan Bank System of more than 3,100 member institutions operates through 12 regional Home Loan Banks geographically distributed. In effect here has been created a national reserve system in the field of home financing that already has had a significant effect in insuring liquidity to member institutions. One-third of the nation's building and loan associations holding one-half the total assets have joined the system which has an authorized line of credit twelve times the paid-in subscriptions to the capital stock of the banks.

The chart to the right indicates that as of March 1 the total loan advances by the regional banks to member institutions, in most cases at interest rates of 4½% or less, had approximated $135,000,000. Borrowing institutions have made repayments, so that as of the same date the balance of loans outstanding was less than $83,000,000. A year earlier, when the resources of the system were considerably smaller, the loan balance approximated $94,000,000. Deducting the balance of loans outstanding from the authorized line of credit, it is seen from the accompanying chart that as of March 1 the unused line of credit approximated $175,000,000, the highest point since the inauguration of the system.

The system was established to insure to member thrift institutions a considerable degree of liquidity under all conditions. This is to be accomplished by means of long-term credits that cannot be called; loan repayments are amortized conveniently, to protect borrowing institutions against lump-sum payments.

(Continued on page 27, advertising section)



NEWS OF THE FIELD

Joseph B. Klein, architect, announces the opening of an office at 423 Fourth Avenue, New York City.

Larson and McLaren, architects, have moved from 308 Baker Building to 400 Roanoke Building, Minneapolis, Minnesota.

The firm of Feil and Hunter, architects, has been dissolved. Harbin F. Hunter, architect, will retain the present offices at 815 Bankers Building, Los Angeles, California.

An architectural glass exhibition has been opened at 748 Fifth Avenue, New York City, by the Corning-Steuben division of the Corning Glass Works. It constitutes a permanent headquarters where structural and decorative glass problems, as well as those involving illumination, can be worked out in collaboration with the Corning laboratories.

Charles T. Ingham of Pittsburgh has been elected national secretary of the American Institute of Architects to succeed Frank C. Baldwin of Washington, D. C., according to an announcement by Ernest J. Russell, president of the Institute. Mr. Baldwin, one of the most widely known architects in the United States, retires after more than thirty-seven years of activity in the affairs of the Institute. Mr. Ingham, a member of the firm of Ingham and Boyd since 1911, was Regional Director of the Institute from 1929 to 1932 and is a past president of the Pittsburgh Chapter.

At its first national convention in Chicago, the Federation of Architects, Engineers, Chemists, and Technicians elected the following officers: president, Robert M. Sentman of Washington; first vice-president, F. Yaekel of Pittsburgh; second vice-president, Frank Kornacker of Chicago; secretary, Jules Korchien of New York; treasurer, A. Krell of New York. Immediately after the convention, Mr. Sentman and Mr. Korchien took part as F.A.E.C.T. delegates in the National Congress for Unemployment and Social Insurance, held at Washington in support of the Workers' Bill for Unemployment and Social Insurance.

The Committee on Competitions of the American Institute of Architects has approved the program for the selection of an architect to design the proposed building for the Federal Reserve Board in Washington. Nine competitors were selected as follows: Arthur Brown, Jr., San Francisco; Coolidge, Shepley, Bulfinch and Abbott, Boston; Paul Philippe Cret, Philadelphia; Delano and Aldrich, John Russell Pope, James Gamble Rogers, Egerton Swartwout, and York and Sawyer, New York; Holabird and Root, Chicago. The building is to be erected on Constitution Avenue adjacent to the National Academy of Sciences, designed by the late Bertram G. Goodhue. The program, prepared by Dean Everett V. Meeks of the Yale University School of Fine Arts, provides for a structure of white marble, to conform to the material of its neighbors. A clause in the program states that "it is further suggested that the use of columns, pediments, and other similar forms may be omitted and should be restricted to a minimum consistent with the character of the building." This would appear to indicate that the reign of the column and pediment is nearing its close, even in Washington, according to a statement by Dr. Charles Butler of New York, a member of the Institute's Committee on Competitions.

CALENDAR OF EXHIBITIONS AND EVENTS

March 12	Closing date of "Home Electric" Architectural Competition, sponsored by General Electric Company. For program, apply to Kenneth K. Stowell, professional adviser, General Electric Co., Room 1208, 570 Lexington Avenue, New York City.
March 13	Closing date for applications for Scholarships for special students in Harvard Architectural School, Cambridge, Mass.
March 15	Closing date for registration for John Stewardson Memorial Scholarship in Architecture. Apply to Edmund R. Purves, secretary, The Architects Building, Philadelphia.
March 18 May 14	Exhibition of African Art, Museum of Modern Art, New York City.
Week of March 25	Greater New York Better Housing, Home and Building Modernization Exposition.
April 4-13	Architectural League Exhibition, Grand Central Palace New York City.
April 8	Closing date for submission of drawings in study-competition for low-cost houses conducted by New York Chapter, A.I.A., 522 Fifth Avenue.
April 15- May 15	Industrial Arts Exposition at Rockefeller Center, New York City, under auspices of National Alliance of Art and Industry. Model of Frank Lloyd Wright's Broad Acre City.
May 4-12	Annual Building Exposition in San Francisco.
May 21-24	Sixty-seventh convention of the American Institute of Architects in Milwaukee.
July 16-20	Fourteenth International Housing and Town Planning Congress in London.

The New York Chapter of the American Institute of Architects proposes a Study-Competition among its members to demonstrate that houses for the lower-income groups offer the same opportunity for excellence of design as do more expensive houses. No prizes will be awarded in this competition. It is proposed to select from six to ten of the most meritorious submissions, and, after having careful cost estimates made for various sections of the country, to have rendered perspectives made and given the widest possible publicity—with the intent of stimulating interest on the part of the prospective builders of such houses in engaging the services of architects. The competition ends April 8.

The Alumni Association of the American Academy in Rome has announced the winners of the "Venus Pencil Awards," donated by the American Pencil Company, in the annual collaborative competition for students of architecture, landscape architecture, painting and sculpture. The first prize of $300 was awarded to a team from the University of Michigan, of which the members were: Rudolph A. Matern, architect; Donald B. Gooch, painter; Jane H. Higbie, sculptor, and Richard I. Levin, landscape architect. The second prize of $150 was won by a Cornell University team: James W. Breed, architect; Adelaide E. Briggs, painter, and Louis J. Perron, landscape architect. The third prize of $75 went to a Yale University team: E. P. Foster, Jr., architect; S. B. Simard, painter, and D. D. Grainger, sculptor. First medals were also awarded to these teams and to three teams from the University of Pennsylvania and to one team from Cornell University. Second medals were given to one team from George Washington University and to one from the University of Pennsylvania. The problem was a Museum of Natural History and its setting in a park in a large city.

FEATURES IN THE APRIL ISSUE

BROADACRE CITY — Frank Lloyd Wright's design for a theoretical community whereby town and country are integrated. Mr. Wright's description of his new project will be illustrated by plans and photographs of a large model which he has prepared for the Industrial Arts Exposition, opening April 15 at Rockefeller Center, New York City.

ARCHITECTURE AND INDUSTRIAL DESIGN — An article by Harvey Wiley Corbett which points out the opportunities for extending the scope of architectural practice to include this new field of design.

PORTFOLIO OF INDUSTRIAL ARTS — A series of plates illustrating recent work by industrial designers.

THE MEANING OF INDUSTRIAL DESIGN — A critical study by Charles R. Richards, director of the Museum of Science and Industry (New York), analyzing current trends in this field.

PORTFOLIO OF CURRENT ARCHITECTURE — Views, plans and descriptions of new buildings, including the Kansas City Court House, the Old Heidelberg Inn in Chicago, and various small houses and apartments.

IN THE CLIENT'S INTEREST — A paper by William L. Steele, architect, commenting on the problems of the profession.

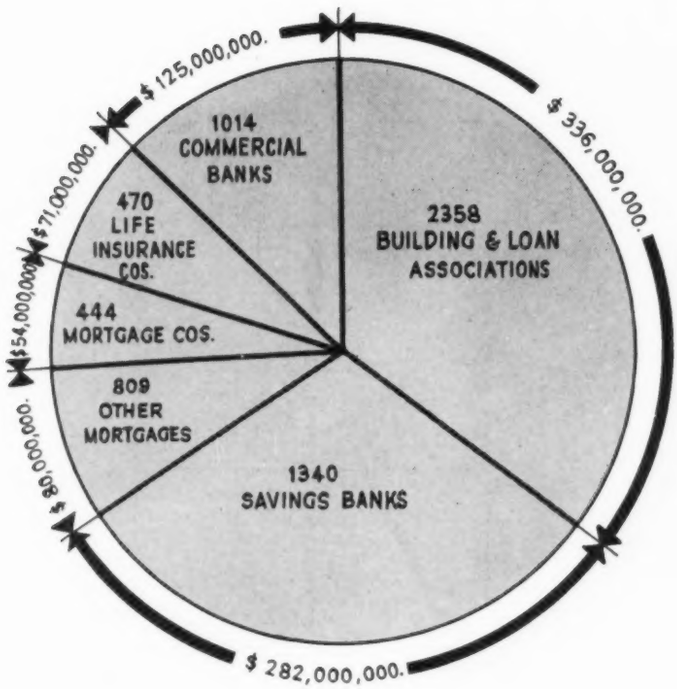
ARCHITECTURAL DRAWING — An article by W. R. B. Willcox, architect, expressing the point of view that "draftsmanship is but a means to an end, and that end a building."

PAINTS—A Technical News and Research article describing the architectural values of paints, particularly the relationship of painted surfaces to interior illumination.

Klettephoto

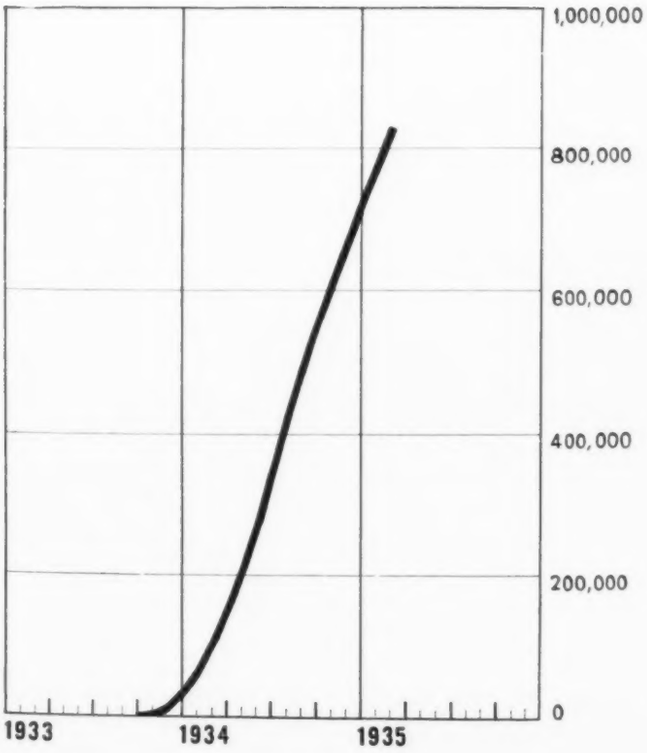
DESK DESIGNED BY
HEINRICH LAUTERBACH

2. Home Owners' Loan Corp. (1933)

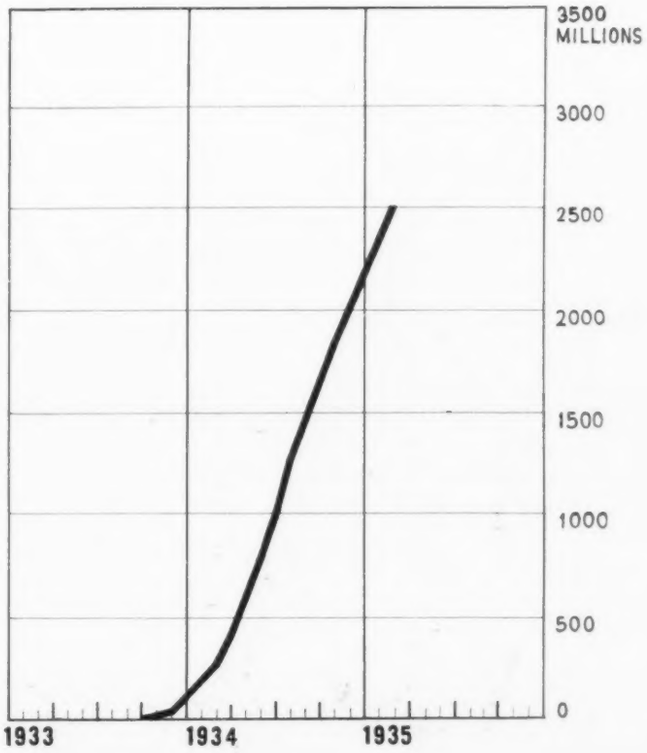


Besides saving almost 820,000 small homes from foreclosure prior to March 1, 1935, involving an exchange of virtually $2,500,000,000 in HOLC bonds for the original distressed mortgages, the Home Owners Loan Corporation has liquefied thousands of lending agencies and depositories of the people's money. Chief among these institutional beneficiaries have been the building and loan associations, the savings banks, the commercial banks, the life insurance companies, and the mortgage companies. To the left is given a distribution of $948,000,000 of HOLC advances for refinancing to 6,435 classified mortgagees as of November 1, 1934. This distribution covers only mortgagees, by types, who had received as of November 1, $25,000 or more from the Home Owners' Loan Corporation in exchange for distressed mortgages. A later distribution, were it available, would probably show little relative difference from the condition depicted. Applications for refinancing were stopped on November 13; total applications had aggregated 1,743,147 and were in the amount of $5,666,875,000. Legislation is now pending to increase the authorized total of $3,000,000,000 of the Corporation by at least one billion to take care of meritorious cases for which applications are on file.

Cumulative
NUMBER of Homes Refinanced #

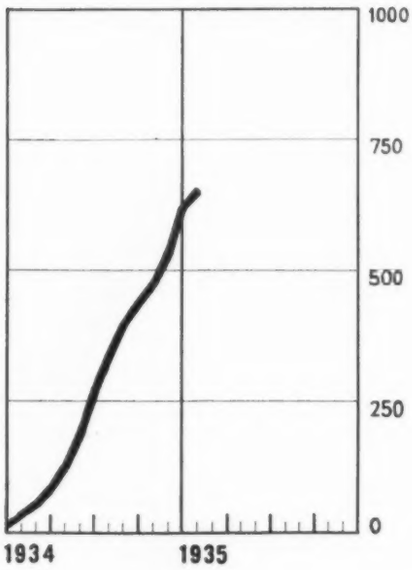


Cumulative
VALUATIONS of Mortgages Refinanced $



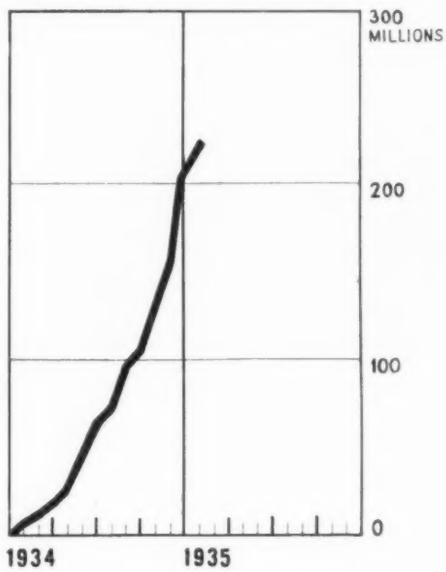
3. Federal Savings and Loan Associations (1933)

Cumulative
NUMBER of Associations #



To March 1, 1935, there were some 620 Federal Savings and Loan Associations in operation with assets of approximately $210,000,000. About 55 per cent are newly-formed organizations, but converted state-chartered institutions have about 97 per cent of the total assets. The number of share investors in the Federal associations is increasing. Loans to depositors are broadening, while withdrawals of funds on deposit are declining.

Cumulative
ASSETS of Associations $



4. Federal Savings and Loan Insurance Corporation (1934)

One of the newest of the government mechanisms in the field of home-financing, the Federal Savings and Loan Insurance Corporation, now protects the savings of more than 200,000 depositors in several hundred building and loan institutions, chiefly Federal associations.

SUMMARY OF OPERATIONS to January 22, 1935	Applications Received			Institutions Insured		
	Number	Share and Creditor Liabilities	Total Assets	Number	Share and Creditor Liabilities	Total Assets
New Federal savings and loan associations	407	$ 7,228,159	$ 7,660,786	520	$129,162,457	$140,976,102
Converted Federal savings and loan associations	161	141,694,987	156,081,126			
State-chartered associations	100	150,946,132	169,041,177	7	14,827,021	16,399,420
Total	668	$299,869,278	$332,783,089	527	$143,989,478	$157,375,522

5. Reconditioning and Modernization (1934)

(a) Home Owners' Loan Corporation:

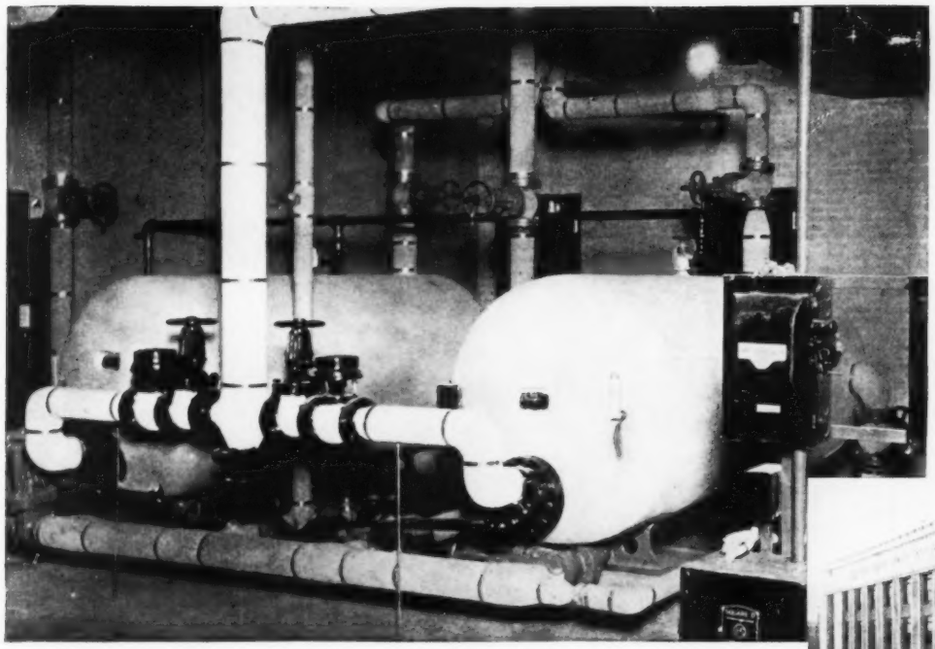
SUMMARY OF OPERATIONS June 1, 1934, to January 3, 1935	Number	Amount
Applications for reconditioning loans	467,733	* $93,000,000
Cases submitted to loan committee	327,383	67,248,323
Total contracts executed	189,285	33,457,975
Total jobs completed	133,277	20,788,108
Jobs paid for	128,793	19,831,464

* Estimated.

(b) Federal Housing Administration, Title I:

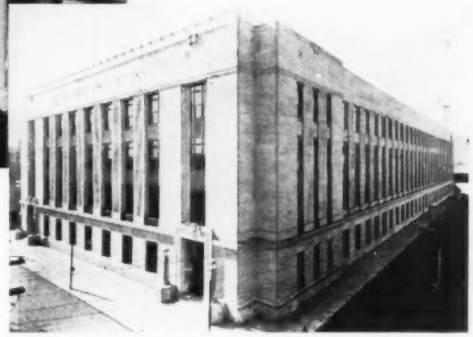
INSURED LOANS as of middle of January*	(20 per cent Federal guarantee against loss)		
	No. of Loans	Dollar Value	Percentage
One-family houses	62,519	$23,644,131	67.3
Multi-family houses	12,262	5,762,322	16.4
Apartments	2,908	2,070,044	5.9
All other	6,039	3,699,456	10.4
Total	83,728	$35,175,953	100.0

* Chiefly for alterations on owner-occupied premises.



At Left—Two all-welded Whitlock Everdur Type K storage heaters made by Whitlock Coil Pipe Co., Hartford, and installed in Cincinnati's new post office building. Each measures 42" x 100" and has an hourly heating capacity of 600 gallons. Everdur *cannot* rust.

Below—U. S. Post Office building in Cincinnati. *Samuel Hannaford & Sons*, Architects. *Carl J. Kiefer*, Consulting Engineer. *Peck, Hannaford and Peck*, Heating Contractors.



Storage Heaters of *durable, rustless* EVERDUR service new Post Office building

IN the new United States Post Office building in Cincinnati, the carefully selected storage heaters will provide a plentiful supply of rust-free hot water *indefinitely*. For their shells are of welded Everdur Metal . . . which *cannot* rust.

* * *

Nearly all copper, Everdur is a special alloy which combines immunity to rust, the strength of medium carbon steel and ready weldability—at moderate cost. No wonder Everdur is enjoying ever-growing acceptance as the ideal material for durable, rustless water tanks of every description—from domestic range boilers to giant storage heaters. Whether for a hotel, laundry, hospital, textile plant, school or brewery, Everdur equipment is available from leading manufacturers.

Equally logical and satisfactory is the use of Everdur for many other applications. Among them: air-conditioning equipment, masonry anchors, drains and ducts, electrical conduit and smoke washers. Additional data on any use of Everdur gladly sent on request.

EVERDUR METAL
"Everdur" is a registered trademark identifying products of The American Brass Company, made from alloys of copper, silicon and other elements.

ANACONDA
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THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
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NRA CODE

EVERDUR METAL *for* TANKS

WAGE SCALES IN THE BUILDING TRADES

Information Furnished by National Association of Builders Exchanges and Compiled by Division of Statistics and Research, F. W. Dodge Corporation, as of January, 15, 1935

	Asbestos Workers	Bricklayers	Bricklayers Tenders	Carpenters	Cement Finishers	Electricians	Hoisting Engineers	Iron Workers—Ornamental	Iron Workers—Structural	Laborers	Lathers	Painters	Plasterers	Plasterers' Tenders	Plumbers	Roofers—Composition	Roofers—Slate & Tile	Sheet Metal Workers	Steamfitters	Stone Masons	Tile Setters	Tile Setters' Helpers
Akron	$1.00	$1.25	$0.45	$0.70	$0.70	$0.75	$0.70	$0.60	$0.60	$0.40	*$0.87½	$0.65	*$1.00	$0.62½	$0.85	$0.80	$0.80	$0.80	$0.85	*$1.25	*$1.25	*$0.50
Atlanta	1.00	1.25 1.40	‡.30 .45	.70	1.25	.90 1.10	.60 1.00	.35 1.85	1.25	.25 .35	1.00 1.25	.75	1.25	.30 .45	1.25	.80	.80	.90 1.00	1.25	1.00 1 25	1.25	.40
Baltimore	1.00	*1.10	1.10	1.00	*1.00	*1.00	*1.50	*1.37½	*1.37½	.40	*1.25	1 00	*1.25		*1.10	.75	.75	*1.12½	*1.10	1.10	1.25	.65
Boston	1.25	*1.30	.70	*1.17½	1.17½	*1.25	1.17½	*1.20	*1.20	.70	*1.50	*1.12½	1.37½	*.95	*1.25	*1.17½	*1.05	1.17½	*1.25	*1.30	*1.30	*.95
Buffalo	1.00	*1.25		*1.00	1.00	1.12½	1.00	1.12½	1.12½	.40 .50	1.25	*1.00	1.33		1.20	.60	1.00	1.00	*1.20	*1.25	*1.18¾	
Chicago	1.37½	1.50	.82½	‡1.31¼	1.31¼	1.50	1.31¼	1.33½	1.35	.82½	*1.50	‡1 33½	*1.50	88¾	1.37½	1.37½	1.50	1.37½	1.37½	1.50	1.50	1.06¼
Cincinnati*	1.15	1.37½	.70	1.20	1.02½	1.25	.80 1.25	1.25	1.25	.45	1.31¼	1.15	1.37½	.70	1.25	1 02½	1.07½	1.07½	1.12½	1.25	1.00	
Cleveland*	1.17½	1.25		1.12½	1.12½	1.37½	1.12½	1.25	1.25	.72	1.25	1.20	1.25		1.25	1.15	1.37½	1.12½	1.25	1.25	1.25	.81¼
Columbus	1.00	1.30	.62½	.80	.80	1.00	1.15	1.25	1.25	.40	1.00	.80	1.00	.62½	1 00	.80	1.00	.80	1.00	.75	1.25	.50
Dayton*	1.25	1.30	.80	1.00	1.15	1.55	1.25	1.35	.50	.50	1.10	1.00	1.20	.80	1.00	.85	1.00	1.00	1.00	1.30		
Denver††	9.00	12.00 *13.00	6.50 7.00	10.00	10.00 11.00	10.00 11.00	10.00	10.00 11.00	10.00 11.00	4.00 5.00	11.00	*10.00	12.00	7.00	11.00	7 00 8.00	7.00 8.00	9.00	9.50	12.00 13.00	10.50	.62½
Des Moines	1.00	1.50	.90	1.15	1.12½	1.25	1.25	1.00	1.00	.77½	1.43	1.25	1.3.½	.90	1.25	1.00	1 00	1 25	1.50	1.25	.67½	
Detroit	1.37½	1.25 max.	.55 .60	.80 1.00	.70 .90	1.25 1.40	.60 1.00	1.00 1.20	1.00 1.25	.50 .55	1.37½	.80 1.00	1.00 1.25	.70 .80	1.00 1.50	.70 .90	.80 1.00	.80 1.00	1 25 1.50	1.25 1.50	1 00 1.25	.80
Duluth	1 00	1.00	.60	.80	.80	1.00	.80	1.00	1.00	.50	1.20	.80	1.20	.80	1 20	.70	1.00	.85	1 20	1.00	1.00	.80
Erie		1.00	.45 .50	.80	.80	.90 *1.00	.90	.60 .80	.90	.40	.90	.60 .70	1.00	.40 .50	1.00	.50 .60	.80 .90	.80 .90	*1.00	1.00	.80	.40 .50
Houston		1.00	.35	.75	.75	1.00	75	1.00	1 00	35		.62½	1.00	.35	1.00	.75	1.00		1.00	1.00	1,00	
Indianapolis	1.32½	1.62½	.90	1.22½	1.17½	1.50	1.37½	1 45	1.45	.40 45	1.37½	1.25	1.57½	1.00	1.00	.60 .90	1.27½	1.22½	1.50	1.62½	1.50	.60
Kansas City	.90	1.32½	.80	1.00	1.00	1.00	1.00	1.00	1.00	.60	1.00	1.00	1.06¼	.80	1.00	.92½	.92½	1.00	1.00	1.12½	1 25	.62½
Los Angeles††	0.00	8.00	6.00	7.00	8.00	7 00	8.00	9 00	10 00	4.00	10 00	7.00	9.00	6 00	9.00	7.00	7 00	8.00	10 00	8.00	6.00	.75
Louisville	1.00	1.25	.62½	1.00	1.00	1 00	1.00	1.10	1.10	.40	1 12½	.95	1.00	.62½	1.12½	.40	.85	.85	1 12½	1.25	1.00	
Memphis	1.00	1.37½	.50	.87½	1.10	1 00	1.12½	.87½	.87½	.40	1.00	1.00	1 25	.50	1.25	.75 1.00	1.12½	1.12½	*1 25	1 37½	1.25	.50
Milwaukee	1.00	1.25	1.25	92½	1.00	1.25	1 00	1.05	1.05	60	1 20	1.00	1.20	80	1.20	1 00	1 00	.92	1.20	1.25	1.25	.80
Minneapolis	1.00	1.00		.80	80	1 00	.80	.90	1.00	.45	.75 .85	.80	1.00	.70	1.00	.70	.70	.80	1.00	1.10	1 00	.65
Nashville		1.00		.60 .75	.50	.75		60	75	.40	1.00	.62½	1.10		1.10	60	.60	.60	1.10	.50	.75	
New Haven*		1.20	.50 .60	.80 1.06¼	1.20	.80 1.00	1.16¾ 1.27½	1.37½	1.37½	45 .65	1.27½	.80 1.00	1.20	.50 .60	1.06¼		1 50	1.06¼	1.06¼	1.20	1.20	
New Orleans	.65 .80	1.25	.85	.55 .75	1.00	1.25	1 25	1 25	1.25	.35 .50	1.25	.75 .90	1.25	.75	1 00 1.25	.40	90 1.15	.90	1.05 1.25	1.50	1.25	.35
New York City††	11.20	12.00	7.20	11.20	11 20	†11.20	13.20	11.20		6.60	11.20	†9 00	12.00	8.50	12.00	10.28	12.62	11.20	11.20	12.00	11.50	8.50
Oakland	6.40	‡9 00	‡6.00	7.20	7 20	8.05	11.00	11.00	11.00	5.00	7.50	7 00	‡7 50	‡6.60	8.80	6.40	6.40	8.80	9.00	9.00	8.00	5.00
Oklahoma City††	8.00	8.00	4.00	6.00 8 00	8.00	6.00 8.00	8.00	8.00	8.00	3.50	80	7 00 8.00	.80	4.00	†.80	6.00	6.00	8.00			11.00	.62½
Omaha	1.32½	1.12½	.45	.90	1.00	1.00	1.00	.90	.90	.50	.90	.80	1.20	.80	1.20	.72½	.95	1.00	1.20	.90	1.00	.50 .60
Philadelphia	1.00	1.50		1.00	1.05	1.25	1 18½	1 25 1.37½	1 00 1.37½	40	1.37½	.90	*1.37½		1.20	1.00	1.25	1.25	1.20	1.25	1.12	.75
Pittsburgh	*1.50	*1.50		*1.25		*1.56¼	1.37½ 1.43¾	*1.37½	1.37½	70	*1 50	.87½	*1.50		1.50	*1.25	*1.50	*1.31¼	*1.50	*1.40	1.33¾	.88
Portland, Ore.††	8.00	*9.60	7.20	7.20	*7.20	*8.00	6.40 9.60	8.80	8.80	4 80	*8.80	7.04	*9.60	*7.20	*8.80	7.20	7.20	*8.00	*8.80	*9.60	8.00	7.20
Reading	.80	.80	.60	.80	.80	.80	.80	.80	.90	.40	.90	.63	90	.60	.90	.80	.80	.70	.90	.70	.75-1.15	.50
Richmond	60 .65	1.25		.60	.35 .40	.80		.70	.70	40	1 00	60	.60		.90	.60	.60	1.00	.90	1.25	1.25	
Rochester	.91	1 25	.55	1.05	*1.25	1.20	90	1.20	1.20	.55	1 20	1.05	*1.25	.55	*1.20	*.95	*. 95	1.05	*1.20	*1.25	1.20	.47½
Salt Lake City ††		9 00	5.00	7.20	8.00	1 12½	1.12½	1.12½	1.12½	4.00	1.10 1 25	7.20	1.50	1.10	8.00	7.20	8.00	8.00	8 00	9 00	8.00	4.00
San Antonio††	6.00 10.00	6.00 10.00	2.00 3.00	2.00 7.00	3.00 8.00	3.00 7 00	4.00 7 00	1.75 4.50	5.00 10.00	1 50 2.50	4.00 7.00	3.00 7.00	4.00 8.00	2.00 3 00	5.00 8.00	5.00 6.00	4.00 6.00	3.00 7.00	5.00 8.00	3.50 8.00	4.00 10.00	2.00 3.00
San Francisco	6.40	9.00	7.00	7.20	7.20	9.00	9.00		9.60	5.00	8.00	7.00	8 80	7.50	8.00	8.00	8.00	7.20	8.00		8.00	5.00
Seattle††	8.00	9.60	5.28	7.20	7 20	*8.80	8.00	8.00	8.80	4.75	*8.80	7.20	*9 60	*6.40	*8.80	7.20	7.20	8.00	*8.80	9 60	8.00	
Sioux City	1.00	1.25	.50	1.00	.90	1.00	1 00	.90	.90	.50	90	1.00	1.25	60	1.20	.90	.90	.85	1.20	1.25	1.00	.60
St. Louis	1.25	1.50	.87½	1.25	1.31¼	1.50	1.35- 1.47	1.47	1.47	.78¾	1.25	1.25	1.50	1.06¼	1.43¾	1.17½	1.25	1.25	1 43¾	1.25	1 25	.76¼
St. Paul	1.00	1.10	.55	.80-.90	.80	1.00	.80	1.00	1.00	.50	1.20	1.00	1.20	.85	1.20	.75	.75	.85	1.20	1.00	1.12½	
Washington, D.C.	*1.50	1.75	.50 .75	*1.37½	1.25	*1.65	*1.37½	*1.65	*1.65	.75	*1.62½	*1.37	*1.75	*.75	*1.50	*1.37½	*1.37½	*1.50	*1.50	*1.25	*1.50	.75
Wichita	60	.75 1.25	.25 .40	.40 .75	.40 1.00	.50 .87½	.30 .75	.40 1.00	.40 1.00	.20 .40	.50 1.25	.50 .87½	.60 1.25	.25 .50	1.00	50 1.00	.50 1 00	.50 1.00	.75 1.12½	75 1.25	.50 1.00	.25 .40
Youngstown††	*1.25	1 25	.80	1 50	1.25	1.35	1.25	1.25	1.25	.40	1.25	1.20	1.25	.80	1 20	1.00	1 25	1.25	1 20	1.25	1.25	.81¼

NOTE.—Where two figures are shown they are the minimum and maximum. All figures are for hou. rates except as indicated. ††8-hour day. ‡6-hour day. †7-hour day. *On 5-day week basis. cCorrection. Asterisk after city indicates all trades on five-day week basis.

ABOVE DATA ARE WAGE SCALES AND DO NOT NECESSARILY INDICATE ACTUAL WAGE RATES BEING PAID IN THE RESPECTIVE TRADES.

Three is a crowd . . . .

Kelvinator has no desire to come between the architect and his client nor to appear in other than an advisory capacity except at the architect's express request. Air conditioning is already very definitely an architectural factor—it will be more so as months pass. Errors have been made and it is not unlikely that more will be made through improper qualifications to deal with air conditioning's complex set of problems.

Realizing the presence of important variables which prevent a standardized approach, Kelvinator long ago set about building up an air conditioning engineering staff employing men skilled in construction, in heating and ventilation, in air filtration and in refrigeration. The result is a trained engineering personnel on which architects can rely for an advisory service which will not put their reputations in jeopardy.

Furthermore, Kelvinator has a recognized standing in the industry. Should service requirements ever arise, long after an installation has been made, Kelvinator will still be at hand. Kelvinator will be glad to work with you. . . . KELVINATOR CORPORATION, *14250 Plymouth Road, Detroit, Michigan. Factories also in London, Ontario, and London, England.* (1042)

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Air Conditioning
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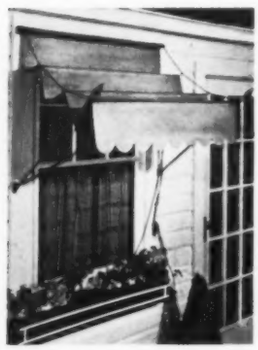
Architects are invited to use the coupon on this page as a convenient means of obtaining manufacturers' publications describing in detail the products and materials mentioned

C51
BOOKLET ON MODERN STORE FRONTS

Pictures, before and after views, of store fronts fill the pages of a 26-page booklet released by Pittsburgh Plate Glass Company. Photographs show examples of store front remodeling recently executed in various cities throughout the country. The new Pittco store front, embodying many improvements in design and construction, is featured in the installations exhibited in this booklet. Other products by the same manufacturer, all of which are adapted to new and remodeled store fronts, are these: Carrara structural glass, polished plate glass, Pittsburgh paint products, Pittsburgh mirrors, tapestry glass. These products and their application to store front construction are explained on pages 20 and 21 of the booklet, which is titled "How Modern Store Fronts Work Profit Magic."

C52
FOLDING METAL AWNINGS

Awnings of solid copper, aluminum and a specially treated rust and corrosion-resisting steel are introduced by the Metal Awning Corporation, New York City. Once installed, these metal awnings remain in position throughout the year. They do not require seasonal removal, storage, reconditioning and re-installation, as do fabric awnings. Metal awnings may be used with the natural metal finish or they may be painted to harmonize with the exterior color scheme. A wide selection of patterns is now available. The manufacturer states that these awnings retain their attractive appearance through the years, requiring no maintenance except repainting. Another feature is the neat and decorative appearance of the valance formed by the awning in folded position. According to the



manufacturer, tests have demonstrated that these metal awnings, which are constructed to withstand the most severe weather, are considerably cooler then are the fabric type. The reason advanced is that the sun's rays are deflected by contact with the metal surface. Heat radiation from the underside is said to be negligible in comparison with heat penetration through fabric. While affording protection from the sun's rays, a sufficient amount of daylight is reflected into the room from the underside of the awning which may be painted in a light color. The fireproof construction of metal awnings is also an important advantage. Installation is a matter of minutes and can be accomplished with an ordinary screw driver. Detailed descriptive matter will be furnished on request.

C53
NU-WOOD FOR WALLS AND CEILINGS

Nu-Wood is processed wood. It is formed by individual fibers which are intricately interlaced to form a multiple-purpose board of new appearance. It is made in various size units of several surface styles to cover walls and ceilings in all types of existing buildings, as well as those of new homes, offices, stores, theaters and other structures. As a pre-decorated interior finish, Nu-Wood claims to perform four jobs in one application and at one cost: It insulates, decorates, hushes noise, and renews walls and ceilings or takes the place of lath and plaster in new buildings. The colors of Nu-Wood are variegated in manufacture to provide any number of attractive combinations. A booklet, "Pacemaking in Decoration," has just been issued by The Wood Conversion Co., manufacturers of Nu-Wood. The booklet illustrates a variety of home and public building interiors where this product has been used for walls and ceilings. Closing pages describe the method of application to various kinds of backing.

AN OFFER TO ARCHITECTS PRACTICING IN UNITED STATES

TO OBTAIN FURTHER INFORMATION

about any products mentioned, write the index numbers in space below. For literature about products *advertised* in this issue, give name of the product and manufacturer. Return coupon to The Architectural Record, 119 West 40th Street, New York, N. Y.

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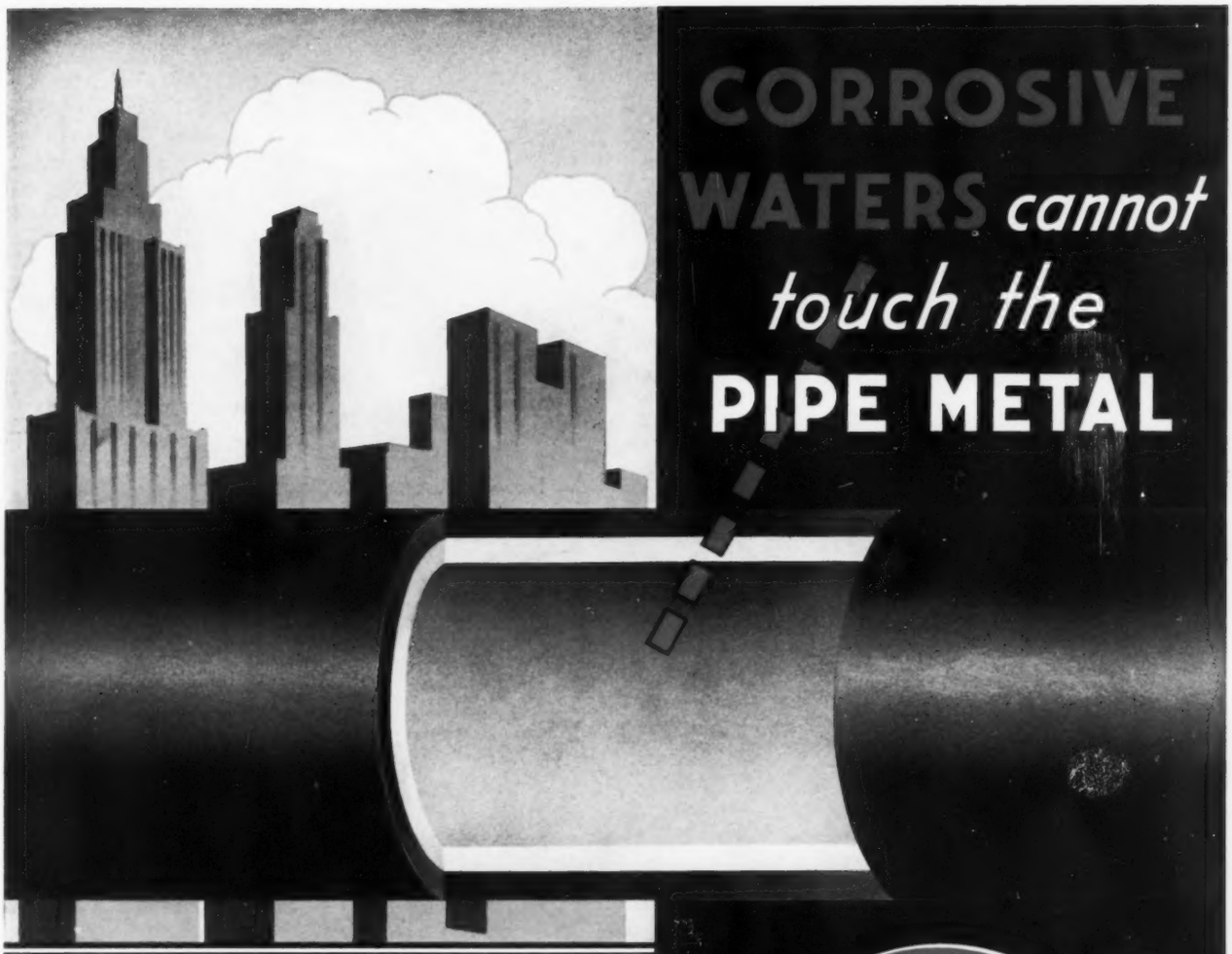
Name _____

Position _____

Street _____

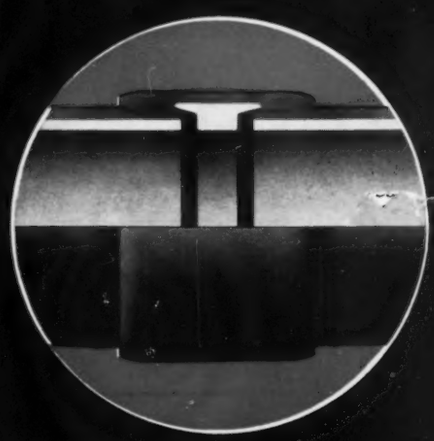
City and State _____



CORROSIVE WATERS *cannot touch the* PIPE METAL

When Duroline Pipe is installed in hot- and cold-water supply lines, one thing is certain—even if the water is of a corrosive nature, its destructive influence is of no importance. The special Duroline cement lining does not permit water to touch the pipe metal—no corrosion is possible. Therefore, you can have all the desirable features of steel pipe, such as uniform high strength, ductility, etc., with freedom from corrosion and tuberculation, at a cost only a trifle higher than that of galvanized pipe.

Architects, engineers and contractors will win appreciation for themselves and make a better investment for the owner by specifying and using this modern pipe in any type of structure, whether it be office or public building, hospital, school or residence. NATIONAL engineers will be glad to give further information. A bulletin on Duroline will be furnished on request.



Section of National DUROLINE Pipe coupling and joint. Note special highly corrosion-resistant joint compound on end of pipe and on threads.

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Pacific Coast Distributors—COLUMBIA STEEL CO., San Francisco, Calif.
Export Distributors—UNITED STATES STEEL PRODUCTS CO., New York, N. Y.

United States Steel Corporation Subsidiary

NATIONAL DUROLINE PIPE

C54
NEW PICK-PROOF LOCK

A lock that is said to have police executive endorsement of its claims to be pick-proof, drill-proof and force-proof, and further, that its key is copy-proof, is being manufactured by the Dudley Lock Co., Chicago, Ill. This new lock, in addition to affording absolute burglary protection, is represented by the manufacturer as one of exceptionally good appearance and is adapted to homes, apartments, factories, public buildings and all other types of structures. Full details on request.

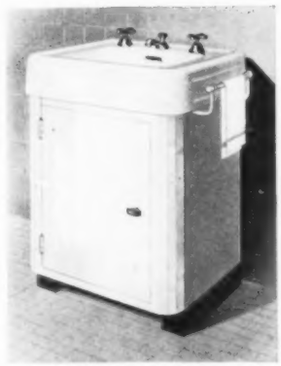
C56
FACTS ABOUT GYPSUM PLASTER

The Gypsum Association of Chicago offers two publications: (1) Standard Specifications for Gypsum Plastering, giving complete specifications covering the mixing and application of the different kinds of gypsum plasters applied to various bases. Also included are specifications covering the mixing and application of the usual type of finishes commonly employed. (2) The Fire Resistance of Gypsum Plaster describes the fire protection afforded by gypsum plaster as found in the reports of fire tests conducted by the Underwriters' Laboratories and by the Bureau of Standards. Both publications can be obtained on request.

C57
GUIDE TO WOOD PRESERVATION

The subject of wood preservation has been comprehensively treated in a booklet just published by the Tennessee Eastman Corporation, Kingsport, Tennessee. It deals with the protection of wood against decay, dry rot, and termites. It reviews the various methods of preservation and sets forth recommendations for the treatment of different types of construction. Photographs and drawings are used profusely.

C58
CORWITH CABINET LAVATORY



Crane Co. has designed the Corwith Cabinet Lavatory. This new enameled iron lavatory can be furnished in white or color. It has a deep basin, large cabinet space, handy towel bar, and a raised spout to prevent back-siphonage. It also has a recessed base to provide adequate foot room. All trimmings are chromium plated. The lavatory measures 24" x 20".

C59
TABLE TOPS AND COUNTERS

Formica Insulation Company of Cincinnati has released a folder containing illustrations of more than twenty interiors wherein Formica is used for table tops, counter tops, back bars, back bar panels, wall covering and for other purposes requiring a material that is handsome and durable. A copy of this folder will be sent upon request.

C510
NEW FIREPROOF DOOR

A folder released by Acme Kalamein Door & Sash Co., Inc., of New York City, describes a test in which a door of their invention was subjected to a concentrated heat of 1,800 degrees Fahrenheit for one hour. The manufacturer reports that the door, hinges and lock were in no way disabled by the intense heat. Full details about this door including additional facts revealed by fire tests are offered by the manufacturer.

FACING THE FACTS

"In all of the laboratories throughout the building the hazard of damage and destruction to piping has been faced, and Duriron piping and fittings used as an acid-resistant in the drainage systems."

Report on the Montreal Neurological Institute, McGill University, in "School Progress"

THE DURIRON COMPANY, Inc.
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DURIRON
ACID PROOF
DRAIN PIPE

SENSATIONAL PAINT TEST

Shows architects how to avoid premature paint failures

[Mail coupon for complete picture story.]

• One of Indiana community homes painted with Eagle Pure White Lead. Two years later, when other paints had cracked and peeled badly, Eagle White Lead showed almost no signs of wear.

● Architects can heave a big sigh of relief and forget about paint troubles. A remarkable paint test made on a whole community settles the question once and for all. It proves what house paint will stand up best under all conditions.

The test was made in a northern Indiana mill town. The 100 homes in the community were divided into 3 sections. Each section was painted with a leading kind of paint. In a short time, two of the paints used had cracked, peeled or discolored badly. They had to be touched up within two years. During the same period, the third paint — 100% Eagle Pure White Lead—showed little sign of wear. The houses in this section did not need repainting until 5 years later!

The initial cost of Eagle Pure White Lead was approximately the same as the other paints, but its final cost was much less. It went on giving good service 3 years after the other two paints had failed.

There is a definite swing to quality paints everywhere. Save yourself the embarrassment of premature paint failures by specifying Eagle Pure White Lead for exterior work on all your houses.

Remarkable paint test was made here

• There are 100 homes in this northern Indiana community. Bothered with costly paint failures, the real estate management determined to find out once and for all what paint was most durable, most economical. Of the 3 paints tested, Eagle Pure White Lead was the only one that gave satisfactory service. Mail coupon for complete story.

EAGLE *pure* WHITE LEAD

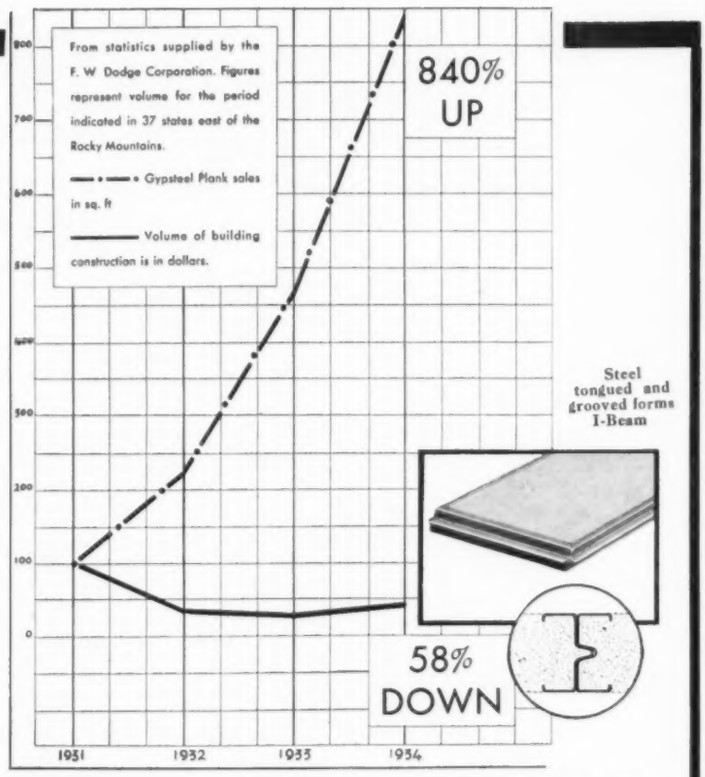
Boost the Better Housing Program in your community

MAIL THIS COUPON ● The Eagle-Picher Lead Company, Dept. AR3, Cincinnati, Ohio. Please send me a copy of the folder that tells the complete story of the Indiana Community Paint Test.

*Name*_____

*Address*_____

*City*_____ *State*_____


From statistics supplied by the F. W Dodge Corporation. Figures represent volume for the period indicated in 37 states east of the Rocky Mountains.
Gypsteel Plank sales in sq. ft
Volume of building construction is in dollars.
840% UP
58% DOWN
Steel tongued and grooved forms I-Beam
1931
1932
1933
1934

GOING UP...UP, AND UP

This chart tells the story of *Gypsteel Plank's* acceptance and popularity.

On hundreds of jobs *Gypsteel Plank** has demonstrated its simplicity, adaptability and speed of erection in low cost fire-resistive floor and roof construction. It is the up-and-coming fireproof structural material in the building industry today. Below is a list of architects** and industrial concerns*** who have specified and used *PLANK* not only once but *repeatedly*.

SEND FOR FREE BULLETIN giving full details about *Gypsteel Plank*, what it is, what it is used for, how it is handled, and how it saves time and money on construction.

**ARCHITECTS

Dwight James Baum, N. Y. C.
Bley & Lyman, Buffalo, N. Y.
Heacock & Hekanson, Phila., Pa.
Melvin L. & Harry A. King, Syracuse, N. Y.
Shreve, Lamb & Harmon, N. Y. C.
U. S. Govt., Various Depts., Washington, D. C., and many others.

***INDUSTRIES

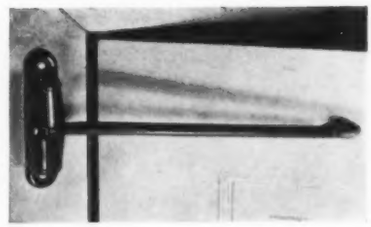
Hershey Choc. Corp.
General Electric Co.
Borden Company
Gulf Refining Co.
Pennsylvania Railroad
Western Electric Co.
and many others.

*The term PLANK as applied to cementitious building products is a trademark of the American Cyanamid & Chemical Corporation.

GYPSTEEL PLANK

U. S. Pat. No. 1,854,396
Canadian Pat. No. 328,519
Other U. S. and Foreign Patents Pending

STRUCTURAL GYPSUM DIVISION
American Cyanamid & Chemical Corporation
30 Rockefeller Plaza, New York, N. Y.



C513
NEW DOOR SPRING

Brookes and Adams Ltd., of Birmingham, England, have created the "Banda" door spring, an unobtrusive unit, simple in design, construction and operation. The bracket and case are molded in Bakelite material in mottle effects to match wood finishes. It is adjustable for tension. The manufacturers claim that it will not damage paint work. The metallic arm is equipped with a rubber roller providing for quiet operation. The device is installed very simply, requiring merely two screws. Where it is impractical to fit the bracket to the door jamb it may be fitted to the door itself, and the roller allowed to travel along the wall, thus eliminating the necessity for making holes in the plaster.

C514
BLACKBOARD CATALOG

Details on types of blackboard, architects' drawings and specifications, installation directions and other pertinent information are contained in a new catalog of the Weber Costello Company, Chicago Heights, Illinois. Attached to the file folder in which the catalog is delivered are two pockets containing samples of (1) Sterling Lifelong Blackboard with special cement-asbestos backing, (2) Hyloplate Blackboard having a backing of four-ply live spruce wood pulp. Copies of catalog sent on request.

C511
GOODRICH ENGINEERING DATA

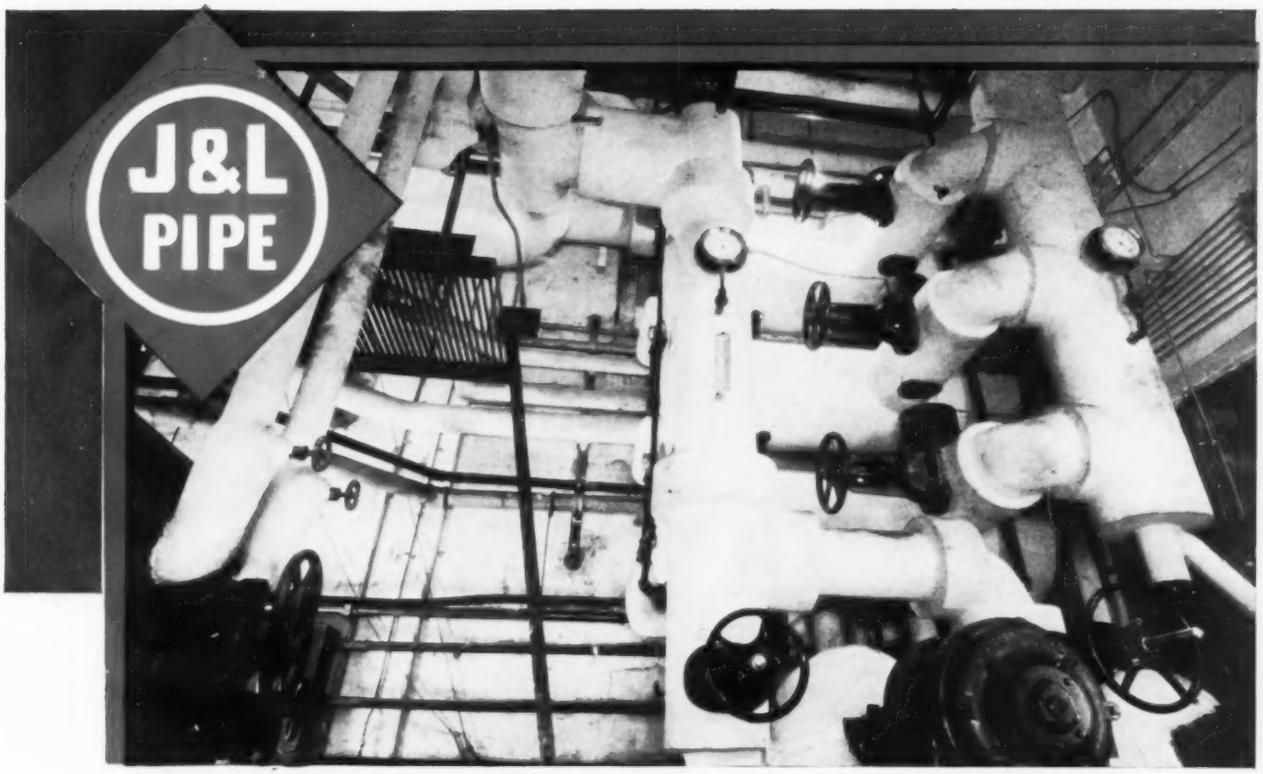
A new book of engineering data, designed to simplify the selection of belting, hose, and other mechanical rubber goods for industrial service, has been compiled by The B. F. Goodrich Company. The book contains 21 pages of information describing over 200 rubber items. It includes more than 100 diagrams and photographs. Supplementing the information on conveyor belting, hose, rubber lining and many other products are glossaries, tables and technical data of wide general interest.

C512
HEATING SYSTEMS

Several selected models of boilers and radiators adapted to different kinds of heating systems are illustrated and briefly described in a folder published by National Radiator Corporation. Copies will be furnished on request.

C515
A NEW PERSPECTIVE LINED SKETCH PAPER

The Wade Instrument Company, Cleveland, Ohio, has developed a new lined sketch paper with which perspectives of almost any subject may be quickly drawn, using a 12" straight edge. The paper is printed green, showing a transparent square prism, each edge graduated 1", ½" and ¼" in perspective. This eliminates the tedious method of gauging distance, and height.



A 100% J & L STEEL PIPE INSTALLATION

for this air conditioning system

J&L
CONSTRUCTION
PRODUCTS

Light Weight Rolled Channels
Junior Beams—Steel Pipe
Bars for Concrete Reinforcement
Standard Structural Shapes
Steel Piling—Nails
Tie Wire
Fabricated Structural Work, including Steel Plate Construction

Jones & Laughlin Steel Pipe was used exclusively for the air conditioning system installed recently in the Lazarus Department Store at Columbus, Ohio. Standard Pipe in several sizes was used for the cooling system. Part of it was furnished with threads and couplings and the balance with plain ends, beveled for welding. **J&L** 15½" water well casing was used for the well supplying water for the system.

Design Engineer: Edward E. Ashley; *Piping Contractor:* S. A. Esswein Plumbing & Heating Company; *Water Well Contractor:* R. M. Baker

J&L Steel Pipe is a high quality product which makes up easily and gives long, satisfactory service. It is made in a full range of weights and sizes. You may look to **J&L** for all your pipe requirements. Write for a copy of the 88-page **J&L** Pipe Catalog. Your request will incur no obligation.

JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
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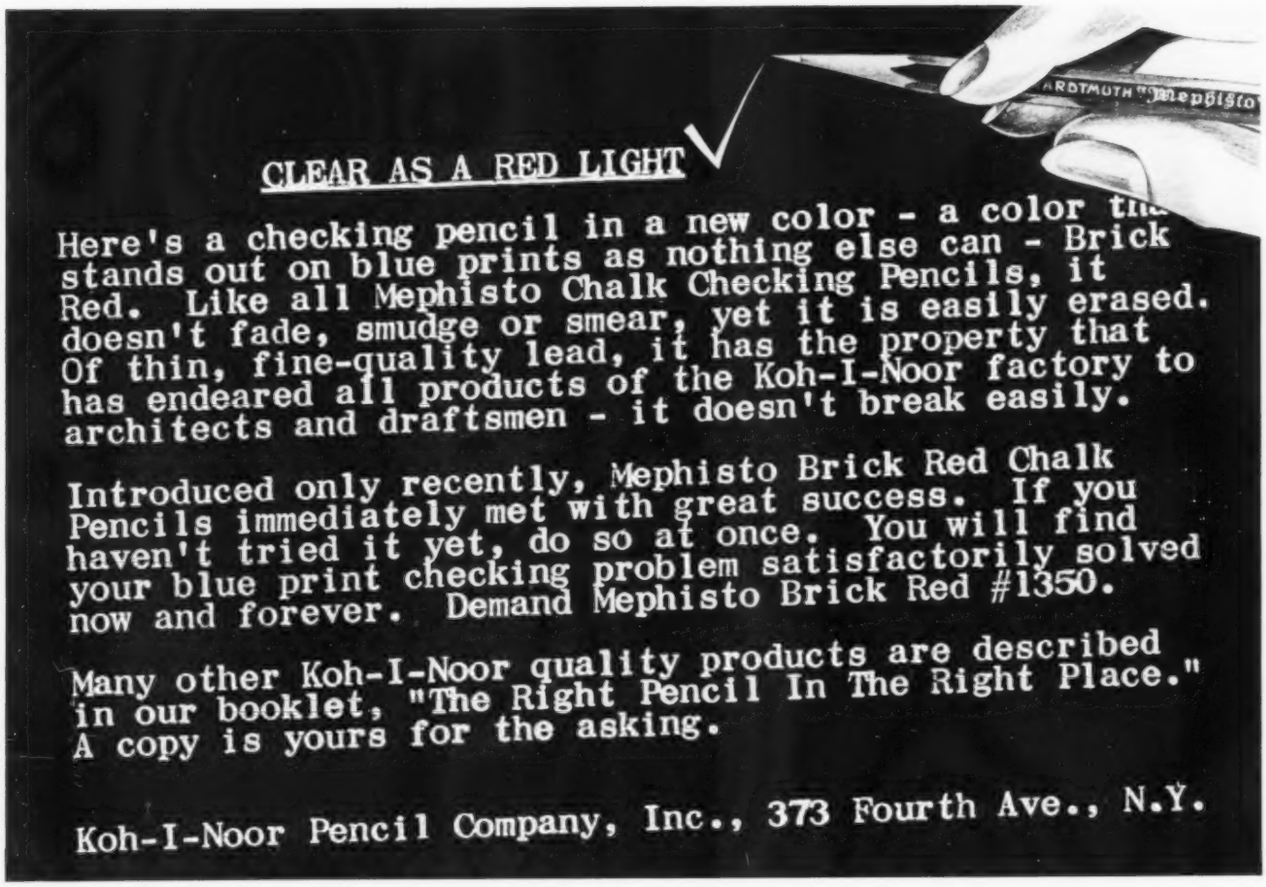
J&L STEEL


CLEAR AS A RED LIGHT
Here's a checking pencil in a new color - a color that stands out on blue prints as nothing else can - Brick Red. Like all Mephisto Chalk Checking Pencils, it doesn't fade, smudge or smear, yet it is easily erased. Of thin, fine-quality lead, it has the property that has endeared all products of the Koh-I-Noor factory to architects and draftsmen - it doesn't break easily.
Introduced only recently, Mephisto Brick Red Chalk Pencils immediately met with great success. If you haven't tried it yet, do so at once. You will find your blue print checking problem satisfactorily solved now and forever. Demand Mephisto Brick Red #1350.
Many other Koh-I-Noor quality products are described in our booklet, "The Right Pencil In The Right Place." A copy is yours for the asking.
Koh-I-Noor Pencil Company, Inc., 373 Fourth Ave., N.Y.

C516
ENDURO 18-8 BOOKLET

A new edition of the subject booklet containing latest authentic data on the various members of the Enduro 18-8 family of stainless steels is announced by Republic Steel Corporation. Information is included on the following: Enduro 18-8, Enduro 18-8-S, Enduro 18-8-STi, Enduro 18-8-SMO, Enduro 18-8-B and Enduro 18-8-FM. An important feature of this 16-page, illustrated booklet is a table showing the degree of corrosion resistance exerted by Enduro Stainless Steel, Types 18-8, S and AA in the presence of several hundred individual chemicals, solutions and other reagents.

C517
STAINLESS LAMINATED METAL

The Himmel Brothers Company of New Haven, Conn., has perfected a process whereby non-tarnishable store front construction is fabricated from stainless, laminated metal at a price said to be within the range of ordinary copper. The new metal consists of a shell of solid stainless steel 18-8 or ordinary stainless steel over a core which can be used in any non-ferrous metal such as bronze, copper, aluminum alloy or a mild steel, if desired. This outer shell of non-magnetic stainless steel requires no polishing. Washing with soap and water is the only maintenance labor required. The steel is then wiped with an ordinary chamois to insure the retention of a higher luster indefinitely.

C518
ELEVATORS FOR PRIVATE HOMES

Otis Elevator Company announces a line of relatively inexpensive elevators for use in private homes. The cost of a modern residence elevator is now no more than that of a good automobile and will not be considered exorbitant by thousands of home owners, especially in cases where there are aged people, cripples, convalescents or invalids in the family. Under the National Housing Act, states the announcement, there is an excellent possibility of financing the greater part of such an installation. The services of an architect, the announcement continues, will be necessary in almost every case to determine the proper place to install the elevator in the home, so that it will not materially alter the interior of the house or cause it to be an eyesore.

The new Otis elevator is controlled by a single press-button at each level. When this button is pushed, the car will come to that floor, unless it is in use. When it arrives—and only then—the hinged shaftway door may be opened, the safety gate pushed back and the cab entered. The swinging door closes automaticaly, so no one can ever fall down the shaft. Then, when both gate and door are closed, a button is presed within the cab, according to the floor desired. There is also a safety stop button which will stop the car anywhere in the shaft. When any floor button is pressed again, the car will go to the floor selected.

WE WANT TO USE A MONEL METAL SINK BUT I DON'T FIND ONE THAT IS THE RIGHT SIZE
DON'T YOU KNOW THAT THEY NOW MAKE THEIR STANDARDIZED MODELS IN INTERMEDIATE SIZES TO THE EXACT FRACTION OF AN INCH?

Split-Inch Sizes and NEW LOW PRICES *are two good reasons for using standardized* MONEL METAL SINKS *on Fine Residence Jobs*

THERE'S no need to juggle designs to *fit in* a standardized Monel Metal sink. Sizes range from 48" to 144" and you can get any model in one piece, and in dimensions that are exact to the fraction of an inch.

Also, there's no need to juggle budgets. With new prices . . . reduced, some as much as 35% . . . you are free to include a Monel Metal kitchen, complete with sink and counters, even in a home of moderate price.

Moreover, you don't need to compromise on details. You have available every possible type of sink: Apron, high back, low back, single or double drainboard, single or double bowl, and with drainboards smooth or grooved . . . 57 models in all.

For complete details, illustrations, and prices, call in a representative of the distributors, Whitehead Metal Products Co., 304 Hudson St., New York, N. Y. Or write direct to them.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET NEW YORK, N. Y.

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

MODERN SCHOOL DESIGNS MUST MAKE PROVISION FOR SOUND SYSTEMS

They speed up administration—aid teaching—are considered essential by modern educators

School executives know the tremendous advantages of centralized control. It enables the principal to keep in constant touch with the whole institution. Talks and messages can be delivered without the confusion and waste of time of a mass gathering in an auditorium.

Even more important is centralized radio. It brings history in the making to the classroom as important events are broadcast. It makes fine music, both broadcast programs and phonograph records, available to music appreciation classes.

RCA VICTOR SOUND SYSTEMS ARE BACKED BY THE WORLD'S RICHEST SOUND EXPERIENCE

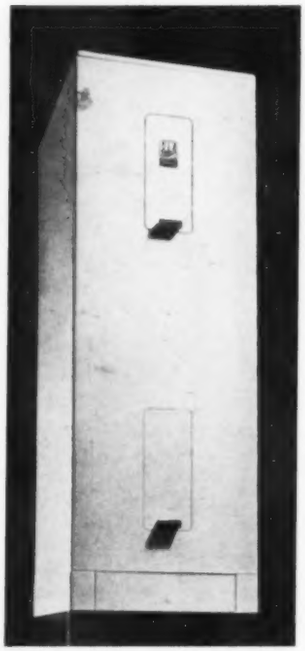
The all-inclusive background of RCA sound achievement is evident in RCA Victor Sound Systems. It is the reason they are used in the country's finest schools. Every part of every system—from microphone to loudspeaker—is of the finest and most advanced type.

Write us at Dept. AR, Camden, New Jersey, for complete information on RCA Victor Sound Systems. We gladly offer technical advice and detail drawings for sound systems—for any jobs you have on your boards.

RCA VICTOR
Commercial Sound Systems

RCA MANUFACTURING COMPANY, INC.,
CAMDEN, N. J. *A Radio Corporation of America Subsidiary*

C519
NEW HOTPOINT WATER HEATER



CHICAGO, ILL.—Edison General Electric Appliance Company has designed a new Hotpoint Electric Water Heater in modern styling. The new model, known as the "Vogue," features square corners and straight lines. Finished in white baked enamel with an enclosed, black enameled base, it is well suited for the kitchen, the laundry, or the modern home basement recreation room. The "Vogue" is being manufactured only in 40-gallon capacity, plain storage type. All Hotpoint features such as heavy insulation, Hotpoint Calrod heating units, Thermosnap automatic temperature control switches, etc., are retained. Single or double unit models with double throw Thermosnap control are available. New flange fittings on the Calrod heating units make it possible to remove them through the side of the tank.

C520
NEW G. E. REFRIGERATORS

Introduction of several new models, adoption of hermetically sealed units in all but two large Flatop models, reduction in operating costs and increases in refrigeration capacities, are the outstanding features of General Electric's 1935 line of domestic refrigerators. The average price level has not been increased over that of 1934. New models include a 4-cubic foot Monitor Top, designed largely for apartment house use; a 6-cubic foot Monitor Top and two large, two-door Flatop models with capacities of 12 and 15 cubic feet. All of G-E's fourteen domestic models, with the exception of the two large Flatops, are equipped with hermetically sealed refrigerating units in the same manner as the Monitor Top, and carry five years protection on the mechanism.

An important mechanical improvement incorporated in all models is Forced Oil Cooling. The method employed provides forced oil lubrication and utilizes the same oil for cooling the motor, thus prolonging life of motor and giving more quiet and efficient operation. Improved mechanical features are said to result in a reduction in amount of electric current consumed. A complete description of the mechanics and construction of the new and continued models will be supplied on request.

WHEN DESIGNING NEW FRONTS FOR OLD STORES UNDER NHA,

• BEFORE: An antiquated, unattractive property in Memphis, Tenn., lying vacant month after month bringing the property-owner absolutely nothing in the way of revenue.

• AFTER: And here is how Architect Raymond B. Spencer and Contractor T. J. Babbitt transformed the property with a new Pittco Store Front. Today the property rents for $200 per month. A liability became an asset, thanks to a Pittco Store Front!

Specify

PITTCO
STORE FRONTS

THERE are many store-remodeling prospects in your community . . . merchants and property-owners who will wish to take advantage of the assistance made available by the National Housing Act to put new, business-drawing, revenue-producing fronts on their old stores. In our advertising to these prospects of yours, we are recommending that they retain a local architect to assist them in their plans.

When they call you in, tell them about Pittco Store Fronts . . . and specify Pittco Store Front Products in remodeling their shop space. These glass, paint and metal products will permit you a new freedom of design, will assist you in creating better-looking, longer-lasting and more profitable store fronts. All Pittco Store Front materials are of the very highest quality, all of a sort to make the finished job you design a more satisfactory one to your clients, and to you.

Our new book, just off press, called "How Modern Store Fronts Work Profit Magic" will give you a very good idea of the possibilities inherent in Pittco Store Fronts. The book contains complete information together with many "before and after" pictures of Pittco modernizations, and numerous photographs of actual, successful installations of Pittco Fronts throughout the country. Sign and mail the coupon below for your copy.

Carrara Structural Glass
Pittco Store Front Metal
Pittsburgh Mirrors

PITTCO
STORE FRONTS
glass . . metal . . paint
PRODUCTS OF
PITTSBURGH
PLATE GLASS COMPANY

Pittsburgh Paint Products
Polished Plate Glass
Tapestry Glass

Pittsburgh Plate Glass Company,
2302 Grant Building, Pittsburgh, Pa.

Please send me, without obligation, your new book entitled "How Modern Store Fronts Work Profit Magic":

Name_____

Street_____

City_____ State_____

Hard boiled Architects

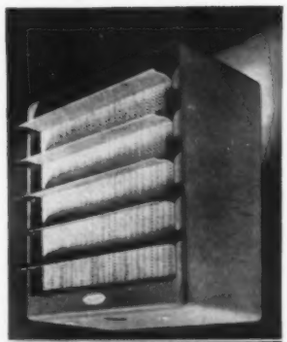
like

FEDDERS

Series 3

UNIT HEATERS

Pat. 1,970,105; *other Pats. Pending.*



Handsome sturdy cabinets, high efficiency streamline tubes, patented fin construction, quieter operation, full-floating element mounting, elimination of inter-tube expansion stresses are just a few advanced engineering features of Fedders Series 3 Unit Heaters. Write for Catalog 527.

FEDDERS
MANUFACTURING COMPANY
57 Tonawanda Street Buffalo, N. Y.

LEONARD

Thermostatic

WATER·MIXING VALVES

SERIES-T

QUALITY

ECONOMY

DURABILITY

QUALITY because of fine workmanship and materials. ECONOMY because of low first cost and upkeep. DURABILITY because of simple construction. Series T Water-Mixing Valves furnished for exposed piping only. Literature describing Series T and R Valves sent on request.

LEONARD ROOKE CO. INC. PROVIDENCE R.I.

C521

WELDING ELECTRODES

General Electric Company has developed a line of welding electrodes which include bare, lightly fluxed, metallic-sheath-covered, and heavily coated electrodes and is prepared to recommend a suitable type for every ferrous application. A booklet, Welding Electrodes, deals exhaustively with subject and is offered on request. A companion release, General Electric Arc Welders, describes and illustrates the G. E. line of arc welders.

C522

GREENHOUSES

A 28 page booklet is offered by Lord & Burnham Company, greenhouse designers and manufacturers of New York. Booklet illustrates and describes not only greenhouses for growing plants and flowers but also glass enclosures for basking in the sun, for housing swimming pools and for children's play spaces.

TRADE ANNOUNCEMENTS

BRIGGS TO ENTER PLUMBING FIELD

The Briggs Manufacturing Company is reported to be remodeling its Hamtramck plant in Detroit for the manufacture and display of a new type of plumbing ware. It is said that the plumbing line, which will include kitchen cabinet sinks, bath tubs and other fixtures, will be operated as a separate unit from the company's automobile body division. The line represent a departure in the manufacture of plumbing ware, according to report, and will make possible new designs not before obtainable.

ALLIS-CHALMERS MANUFACTURING CO.

Allis-Chalmers Manufacturing Co., Milwaukee, Wisconsin, announces the removal of its Pittsburgh District Office to 2037 Koppers Building. Mr. Guy V. Woody is Manager of the Pittsburgh District.

ARMCO

The Edgecomb Steel Corporation, of Newark, New Jersey, has been made a distributor of Armco Stainless Steel sheets, plates, and strip, sales officials of The American Rolling Mill Company announced.

PORTLAND CEMENT ASSOCIATION

The Portland Cement Association announces appointment of E. M. Fleming as District Manager in charge of the New York Office, effective March 1. For the last six years Mr. Fleming has been manager of the Highways and Municipal Bureau of the General Office in Chicago. Since joining the staff of the Association in 1926 he has also served as field engineer and street engineer. He is a member of the American Society of Civil Engineers.